

# ANNETTE SUMMERS ENGEL

UNIVERSITY OF TENNESSEE

DEPARTMENT OF EARTH AND PLANETARY SCIENCES

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## EDUCATION

<b>Ph.D. Geological Sciences</b>	2004	The University of Texas at Austin, Austin, Texas Dissertation Advisor: P.C. Bennett
<b>M.Sc. Biological Sciences</b>	1999	University of Cincinnati, Cincinnati, Ohio Thesis Advisor: B.K. Kinkle
<b>M.Sc. Geology</b>	1997	University of Cincinnati, Cincinnati, Ohio Thesis Advisor: W. Huff
<b>B.A. Geology</b>	1995	Wittenberg University, Springfield, Ohio Senior Thesis Advisor: J.R. Ritter

## PROFESSIONAL HISTORY

- August 2016 – present. **Donald and Florence Jones Professor of Aqueous Geochemistry.** University of Tennessee, Department of Earth and Planetary Sciences, Knoxville, Tennessee.
- August 2011 – July 2016. Jones Associate Professor of Aqueous Geochemistry. University of Tennessee, Department of Earth and Planetary Sciences, Knoxville, Tennessee.
- July 2015 – present. Adjunct Associate Faculty. Clemson University, Department of Biological Sciences, Clemson, South Carolina.
- August 2011 – May 2012. Adjunct Associate Professor. LSU, Dept. Geology & Geophysics
- May 2010 – July 2011. Associate Professor of Geomicrobiology. Louisiana State University, *joint appointment* to the Dept. Geology & Geophysics (primary department, 75%) and Dept. Biological Sciences (secondary department, 25%)
- 2010-2013. Adjunct Doctoral Graduate Faculty. Texas State University, Department of Biology, San Marcos, Texas
- 2004 –2010. Assistant Professor of Geomicrobiology. Louisiana State University, *joint appointment* to Dept. Geology & Geophysics and Dept. Biological Sciences (secondary)
- 1999 - 2004. Research and/or Graduate Teaching Assistant. University of Texas at Austin, Dept. Geological Sciences. Funded by National Science Foundation, John Jackson Fellowship for Hydrology, and University of Texas Endowed Presidential Fellowship.
- 1997 - 1999. Graduate Teaching Assistant. Univ. of Cincinnati, Dept. Biological Sciences.
- 1995. Petroleum Geologist, Intern. Timan Pechura Companies (Exxon), Houston, TX.
- 1995 - 1996. Graduate Teaching Assistant. University of Cincinnati, Dept. of Geology.

## RESEARCH INTERESTS

General: low-temperature aqueous geochemistry; geomicrobiology; microbial ecology  
Specific research areas: groundwater and karst microbial ecology; microbiology of extreme environments; microbial effects on carbonate dissolution; sulfur and carbon biogeochemical cycles; dissolved organic matter cycling and processes; chemolithoautotrophic processes; microbial diversity of marine bivalve symbiotic associations; marine wetland biogeochemistry

## AWARDS AND RECOGNITION OF SCHOLARLY ACHIEVEMENT

### International

- **Prize**, “*The most significant publication about caves or a karst-related topic*” of the past four years, for the edited book Microbial Life of Cave Systems, by the Scientific Committee of the Union Internationale Spéléologie (International Union of Speleology), 17<sup>th</sup> International Congress of Speleology, Sydney, Australia (2017)

### National

- **Fellow**, The Explorers Club (2015)
- Karst Waters Institute, Distinguished Service Award (2015)
- National Speleological Society **Science Award** (2014) <http://caves.org/committee/award/>  
Citation: “The NSS Science Award recognizes an individual NSS member who has made significant contributions to the science of speleology.... Annette is described as tireless, enthusiastic, a great teacher, and an inspiration to her students....” From NSS News November 2014, 72(11):9.
- **Fellow** of the Geological Society of America (2012)  
Citation: Engel “...has made important scientific contributions to the field of biogeochemistry of the subsurface environment, particularly in karst terrain. Her work has led to new insights into biological processing of chemical compounds in aphotic and hydrothermal settings and more recently along the Gulf Coast.” From GSA Today July 2012, 22(7):13.
- **Fellow** of the National Speleological Society (2003) (<6% of the membership reaches Fellow status; nominated and elected by peers and committee)

### University

- G.M. Hall Professorship for Extraordinary Service, Department of Earth and Planetary Sciences, Strong Hall New Building Committee, University of Tennessee (2014)
- UT Quest Scholar of the Week, October 7, 2013 <http://quest.utk.edu/scholar-of-the-week/>
- **Excellence in Research/Creative Achievement Award** (Junior level), College of Arts and Sciences, University of Tennessee (2013)
- G.M. Hall Professorship for Extraordinary Service, Department of Earth and Planetary Sciences, Graduate Program SACS Development, University of Tennessee (2013)
- Junior Class Student-Athlete Faculty Appreciation, The Thornton Center and Intercollegiate Athletes, University of Tennessee (2012)
- Honored (with nine other faculty) at LSU vs. Mississippi State football game (92,000+ in attendance) for 2010 Gulf of Mexico BP/Macondo Oil Spill Research Response, LSU Office of the Vice Chancellor for Research and Economic Development, Sept. 18, 2010. See photograph and summary (page 46) <https://sites01.lsu.edu/wp/ored/files/2013/09/ORED-Responding-to-the-Flow.pdf>  
Citation: “So many of our researchers have participated in extensive research and service related to the disaster in the Gulf,” said Doris Carver, interim vice chancellor of research and economic development. “These 10 faculty and staff members are representative of many from the LSU community who demonstrated a strong sense of public service, produced substantial research efforts and also demonstrated commitment above and beyond their normal research and teaching obligations. All of our faculty who worked hard to ensure that the oil would be cleaned, analyzed and mitigated are to be applauded.”
- Faculty Research Award from the College of Science, Louisiana State University, March 2010
- “2009 LSU Rainmaker”, Louisiana St. Univ. Office of Research & Economic Development
- “2008 LSU Rainmaker”, Louisiana St. Univ. Office of Research & Economic Development

### Other Notable Awards

- Wayne Franklin Bowman Endowed Presidential Scholarship and Fellowship, University of Texas at Austin (2003-2004)

- **Charles A. and Anne Morrow Lindbergh Foundation Award** (1997-1998)
- **James G. Mitchell Award, National Speleological Society**, competitive award at national meeting for best speaker under 25 years of age (1996)

## LEADERSHIP ACTIVITIES & CONTRIBUTIONS TO THE PROFESSION

### University of Tennessee, Department, College, & University Committee Work

- **Director of Graduate Studies**, Department of Earth and Planetary Sciences, Graduate Admissions and Program Committee (August 2018 – present; 2012 – 2014). *Responsibilities include:*
  - Provide academic leadership in the department for graduate program expectations, standards, and curricula;
  - Conduct administration and correspondence for the graduate program in the department, including when related to admissions and financial appointments (admissions was previously managed by a separate committee in EPS);
  - Serve as the department contact person with the Graduate School in matters related to graduate education, as well as attend Directors of Graduate Studies workshops and other meetings held by UT Graduate School;
  - Act as one of the primary contacts for prospective students, departmental graduate faculty, college, graduate and international admissions, and Graduate School regarding questions posed about the departmental graduate program;
  - Develop and annually revise Department/Program Graduate Handbook according to the template provided by the UT Graduate School, and provide Graduate School with updated copy of handbook;
  - Contribute to departmental/programmatic orientation of new graduate students, and ensure new GTAs are notified of and registered for attendance at Graduate School orientation during fall semesters, as well as registered international graduate students for SPEAK test and monitored scores, and monitored evaluations and observations of students with probationary scores;
  - Monitor student progress in conjunction with faculty advisors and Graduate Program Committee, and ensure graduate students are aware of and meet established deadlines for timely graduation, which includes overseeing annual progress/evaluation of graduate students within their respective programs, tracking and monitoring the comprehensive exam process and progress of Ph.D. students, monitoring noted deficiencies of admitted students, and notifying advisors, students, and Graduate School of probation and/or potential for dismissal from the program;
  - Coordinate the review and acceptance of M.S. and Ph.D. student research proposals within the department by the Graduate Program Committee, and inform students and advisors of acceptance;
  - Ensure graduate portion of the departmental and college websites are up-to-date,
  - Approve and sign Admission to Candidacy Forms;
  - Maintain, to the extent possible, a list of all graduate degrees awarded in the department (name, title, year, advisor, years in program), and collected data regarding graduate program's productivity, alumni data, and assistantship allocation data;
  - For 2018 – present, facilitate admissions process by organizing applications, notifying faculty of available positions, funding and fellowship opportunities, participating in outreach activities (e.g., booth at Geological Society of America meetings), sending letters to prospective students regarding admission
  - With graduate faculty throughout the year, engage in strategic planning for graduate issues.
- **ICP-MS Geochemist Search Committee**, Department of Earth and Planetary Sciences, 2018 – 2019
- **ICP-MS Initiative**, Department of Earth and Planetary Sciences. Most recent activities involved writing and submitting (with C. Fedo) various proposals and budgetary spreadsheets to Office of Research and Engagement requesting support of an ICP-MS Instrumentation Core Facility; repeated planning and feasibility & sustainability assessments of proposed facility, write and submit report to College of Arts & Sciences, Dec. 2016 – March 2018; writing and submitting department's proposal for tenure-line faculty EPS search in "ICP-MS Geochemistry" to College of Arts & Sciences, April/May 2018; addressing questions regarding facility to end in Memorandum of Understanding (MOU) with Office of Research and Engagement.
- **Geochemistry Teaching Laboratory, coordinator** (Strong Hall Room 719), Department of Earth & Planetary Sciences, *Principal faculty member for space*. Responsibilities and activities include meeting with Contractor(s) about room inadequacies (no DI water line, hood venting, casework) & issues soon after moving into Strong Hall; Messer gave job to Star Team/UT Facilities Services and developed a renovation plan; received quote in December 2017, UTFS work started February 2018 but is not quite finished (loose-ends need completed); budgeted ~\$314K for instrumentation and supplies for classroom, which was also used for renovations; coordinated installation and training (which should extend through August and September 2018); will teach GEOL 593 (3-credit) new course Fall 2018 to use space and develop training materials, budgets, and maintenance plans. Estimated time, ~3 hours/week (sometimes >12 hours/week).
- **Peer teaching review committees**, Earth and Planetary Sciences (D. Burr, Spring 2018; A. Steen, Fall 2015; W. Deane Spring 2012)

- **Chair**, Annual Evaluation Committee, Earth and Planetary Sciences, July 2017 – July 2018
- **Graduate Admissions and Program Committee**, Earth and Planetary Sciences, August 2017 – 2018; 2011 – 2012
- **Selection Committee** for College of Arts & Sciences, Senior College Convocation Research Award, College Convocation Award for the Development of Interdepartmental Collaboration in Scholarship & Research, Fall 2016
- Planetary Mineralogy/Petrology/Geochemistry **Search Committee**, 2015 – 2016
- **Assistant Professor Mentoring Team**, 2015 – present; Faculty Mentor to one assistant professor, Earth and Planetary Sciences, 2012 – 2013
- **Chair**, Discretionary Fund, Department of Earth and Planetary Sciences, 2015 – July 2017  
*Responsibilities and activities include:*
  - Approve expenditures, as outline in departmental bylaws and fund policies, including gift agreements, primarily in support of research and educational activities for students in the Department;
  - Consider and make recommendations to the faculty about changes to awarding procedures;
  - Solicit and coordinate undergraduate research awards based on potential and proposals, in conjunction with Awards Day in the department;
  - Communicate with office staff regarding award notifications from the committee;
  - Provide report to Head of approved expenditures upon request and annually.
- **Diversity** ad hoc committee, Earth and Planetary Sciences, 2014 – 2015
- **Executive Committee**, Earth and Planetary Sciences, Sept. 2014 – July 2017; member because of being Director of Graduate Studies, Chair of the Discretionary Fund
- **Strong Hall Committee**, Earth and Planetary Sciences, June 2012 – July 2017 (with occasion effort through July 2018). *Responsibilities and activities include:*
  - Attend planning meetings with hired and contracted architects and University representatives, including College, Facilities Services, and STAR Team;
  - Evaluate building flow and utilization, safety and resource access;
  - Develop and review construction and move plans for accuracy and continuity over time, including for EPS room schedules for two and a half floors plus basement facilities, for equipment and instrumentation lists, room access and key security, office space and OIT needs, and move schedule;
  - Communicate with College of Arts and Sciences, UT Facilities Services, designers, and EPS faculty;
  - Participate and oversee space assessments, resource allocation, and shared spaces use within department.

### Louisiana State University, Representative list of committee work and leadership

- **Chair, Undergraduate Curriculum Committee**, Dept. Geology & Geophysics, August 2010 – July 2011. *Responsibilities and activities included:*
  - Revised departmental undergraduate course descriptions, syllabi;
  - Worked with faculty to propose new courses, undergraduate educational opportunities;
  - Submitted forms to College for new or revised coursework;
  - Wrote, edited, and submitted Undergraduate Assessment reports annually for SACS;
  - Handled SACS accreditation assessment rubrics and learning objective evaluations;
  - Strategized for, and pursued, funding opportunities for undergraduate education;
  - Coordinated departmental representation and attendance at major career and major fairs, university functions.
- **Executive Committee**, Dept. Geology & Geophysics, Aug 2010 – July 2011
- **College of Science Courses and Curriculum Committee**, Aug 2010 – July 2011
- Science Honors Scholarship Advisory Committee, College of Science, 2010 – March 2011
- Marathon Geoscience Diversity Enhancement (GEODE) Program Student Selection and Advisory Committee, Dept. Geology & Geophysics, August 2009 – July 2011.
- Scholarships and Awards Committee, Dept. Geology & Geophysics, Aug. 2009 – July 2011.
- Search Committee for Endowed Chairs in Geology & Geophysics, College of Science, December 2008 – July 2011.

## Leadership in public & non-profit organizations (using professional expertise)

- **Board of Directors**, Hawai'i Cave Conservancy (501(c)3 organization); Elected April 2018. Director responsibilities include attending meeting once a year, responding to email business for Board in a timely fashion, providing input regarding to endowment and acquisition fundraising, advancing the CCH mission of protecting and managing cave (lava tube) resources and CCH properties in Hawai'i.
- **President**, Biology Commission, International Union of Speleology (Union Internationale Spéléologie) July 2017 – present. Elected position. *Responsibilities and activities include:*
  - Maintain timely communication with UIS and within Commission;
  - Present oral report of Commission activities to General Assembly of UIS;
  - Submit written report of activities to General Assembly of UIS;
  - Submit written papers and/or reports from Commission to UIS General Secretary, Documentation Center, and website, or the Karst Information Portal
  - Coordinate Commission website, and submit information to UIS Website Manager for UIS website;
  - Communicate and promote cooperation internationally with people interested in Commission activities.
- **Field Trip Co-chair**, organizing committee, Southeastern Geological Society of America meeting, April 12-13, 2018. Responsibilities included planning and coordinating seven of nine different trips (only seven made minimum registrants) and editing the field guide chapters; compiling the chapters, writing the introductory chapter, and editing the full book during production. Estimated time commitment was ~15 hours/week (highest activity October – November 2017 & January – February 2018) to ~2 hours/week (low activity, incl. after to follow-up on budgets).
- **International Board**, International Society for Subsurface Microbiology, (501(c)3 organization), Nov 2016 – present.
- **Secretary**, International Society for Environmental Biogeochemistry (501(c)3 organization), Elected position, including treasury account privileges for the society and training for treasury position replacement; January 2016 – 2018.
- **Chair, Graduate Academic Fellowship program**, Cave Conservancy Foundation (501(c)3 organization), November 2014 – present. *Responsibilities and activities include:*
  - Oversee graduate fellowship program;
  - Solicit applications through advertisements, newsletter ads, update website;
  - Answer correspondence regarding application process and requirements;
  - After proposal submission (May 1), organize the review applications, coordinate review team, maintain review sheets for unbiased assessment, and select and notify recipients.
- **Board Member**, Cave Conservancy of the Virginias (501(c)3 organization); Elected to position originally 2013; Reelected 2016 – present. Director responsibilities include attending meetings twice a year and advancing the CCV mission of protecting and managing cave and karst resources in the Virginias.
- **Awards Committee**, Cave Conservancy of the Virginias; 2012 – present. Review and manage 5-10 grant applications per year. *Chair* of awards committee beginning August 2018. Facilitate the review, awarding, and management of grants submitted and funded through program; communicate with grant and award recipients.
- **International Advisory Committee**, International Society for Environmental Biogeochemistry (501(c)3 organization) (elected & re-elected position); 2011 – present.
- **Vice-President of Communications, Karst Waters Institute**. March 2009 – March 2015  
*Responsibilities:*
  - Oversaw the KWI Communications Department, including a publications sales manager, a production manager and editor, and several KWI members and affiliates;
  - Served as the webmaster, developed and updated website (~140,000 unique visitor sessions per year, with ~300 visitors per day), maintained email list (~700 subscribers); responded to inquiries;
  - Enabled publication cataloging and sales (print and digital publications), maintained high-quality editing and publishing for KWI Conference reports and publications, coordinated Library of Congress filing and submission of electronic publications to data repositories, including GoogleBooks;
  - Assisted in planning KWI conferences and sponsored conferences;
  - Facilitated trade show display design and use and developed outreach materials with Vice-Presidents of Education and Research.
- Assistant Webmaster, Karst Waters Institute, August, 2007 – March 2009.
- **Board of Directors**, Karst Waters Institute (501(c)3) (elected & reelected positions), March 2005 – 2013. Director responsibilities included attending meetings twice a year and advancing the KWI mission of improving the fundamental understanding of karst water systems.

## SCHOLARLY SERVICE ACTIVITIES AND PROFESSIONAL CONTRIBUTIONS

### Service to organizations (using professional expertise)

- Scientific Committee, 24<sup>th</sup> International Conference on Subterranean Biology, Aveio, Portugal. To occur August 27-30, 2018. <http://www.speleobiology.com/icsb2016/>
- Session Co-chair, “Crossing Redox Boundaries in Coastal Ecosystems: Consequences of Environmental Change” American Geophysical Union, New Orleans, LA, Dec. 11-15, 2017. With B. Roberts (LUMCON) and A. Paterson (UTK).
- Session Chair, “Microbial Subterranean Systems.” International Conference on Subterranean Biology. Fayetteville, Arkansas, June 12-17, 2016.
- Session Co-chair, “New Perspectives in Karst Geomicrobiology and Redox Geochemistry: Advances from 20 Years of Interdisciplinary Research and Exploring Our Future Frontiers.” Geological Society of America, October, 2015, Baltimore, MD. With J. Spear, H. Barton, P. Bennett, S. Carmichael.
- Session Co-chair, “Extreme Environments” and “Climate Change,” International Symposium for Environmental Biochemistry meeting in Piran, Slovenia. September 27 - October 2, 2015.
- Short Course Instructor, UNESCO International Research Center on Karst (IRCK), International Training Course specializing on Karst Microbiology, Guilin, China, October 15 – 25, 2014. Assisted students in field, and presented topics, “Analytical geochemistry and methods application to constrain microbial carbon cycling and interactions,” “Microbial carbon cycling across differing hydrological regimes in karst, from cave streams to deep aquifers,” and “Use of geochemical approaches to quantify microbial ecosystem dynamics.”
- Program Committee, 22<sup>nd</sup> International Karstological School “Classical karst,” theme (changes every year) “Karst and Microorganisms.” Postojna, Slovenia. June 16 – 20, 2014. [http://iks.zrc-sazu.si/en/organizing\\_committee.html](http://iks.zrc-sazu.si/en/organizing_committee.html)
- Session Co-chair, “Disturbance and Stressor Impacts on Microbial Communities and Biogeochemical Feedbacks” 22<sup>nd</sup> Biennial Conference of the Coastal and Estuarine Research Federation, Nov. 23, 2013. With B. Roberts (LUMCON), A. Bernhard (Conn.), and A. Giblin (MBL).
- Session Co-chair, “Feedback Processes and Impacts on Microbial Communities and Biogeochemical Cycling in Coastal Ecosystems Following Stress or Disturbance” Gulf of Mexico Research Initiative Meeting, New Orleans, LA, Jan. 21–23, 2013. With B. Roberts (LUMCON).
- Session Chair, “Sources and Quality of Organic Carbon” Carbon and Boundaries in Karst meeting, Carlsbad, New Mexico. Karst Waters Institute, Jan. 7 – 11, 2013.
- Short Course Instructor, “Microbe-Mineral Interactions,” a Short Course by the International Society for Environmental Biogeochemistry, Cancun, Mexico, November 4 – 8, 2012.
- Session Chair, “Biogeochemical controls and consequences of symbiotic associations.” 20<sup>th</sup> International Society for Environmental Biogeochemistry, Istanbul, Turkey, Sept. 27 – 30, 2011.
- Conference Organizer, “Carbonate Geochemistry: Reactions and Processes in Aquifers and Reservoirs”, Billings, Montana, August 6 – 11, 2011. Sponsored by Karst Waters Institute. Co-organizers: PJ Moore (ExxonMobil) and Harvey Duchene (Vectra Oil, Ltd.). Started planning Nov. 2008. Led post-conference field trip in Bighorn Basin coordinated with Bob Stewart, ExxonMobil. *Responsibilities*: Fund-raising and budgeting, advertising, publicity, inviting speakers, handling on-site logistics and finances, coordinating Scientific Committee and Field Trip Committee, handling publication proceedings and editing.
- Session Chair, “Marine extremophiles.” World Congress of Marine Biotechnology, Dalian, China, April 2011.
- Session Co-chair “Biotic responses to the 2010 *Deepwater Horizon*/Macando oil spill incident: microbes to macrobiota” South-Central Section Geological Society of America, New Orleans, LA, March 2011. With Laurie Anderson.
- Pardee Session Co-chair “Symbiosis as a Driver of Global Change in Ancient and Modern Earth Systems” Geological Society of America meeting, Denver, CO, October 2010. With L. Anderson.

Also included a poster session under the same name.

- **Session Co-chair** “Microbial Sulfur Transformations: Past, Present, and Away” Goldschmidt 2010, Knoxville, TN, June 2010. With S. Gruenke, J. Macalady, S. Sievert, A. Templeton.
- **Session Co-chair** “Biomats and other topics related to subsurface microbiology,” International Symposium for Subsurface Microbiology, Shizouka, Japan, November 2008.
- **Session Co-chair**, Geological Society of America meeting, Denver, CO, Topical session, “Perspectives in Redox Geochemistry and Microbial Processes,” Oct. 2007. With J. Roberts.
- **Workshop Co-Chair** (1 of 4 people), “*Future Directions in Karst Research*”, organized by the Karst Waters Institute, August 2004 – May 2007. *Responsibilities*: determining and organizing meeting content, obtaining funding for workshop, running a workshop session, and drafting workshop white-paper. The workshop took place May 2 – 6, 2007, in San Antonio, Texas.
- **Session Co-chair**: Topical Session for the Geological Society of America meeting, Denver, CO, Nov. 2004. “New Perspectives in Karst Geomicrobiology and Redox Geochemistry,” with D. Northup and T. Dogwiler.
- **Session Co-chair**: Biology Oral Session, National Speleological Society meeting (Marquette, Michigan), July 2004, with M. Porter.

### **Service to government agencies**

- National Science Foundation, review panels for various programs; 2006, 2009, 2010 2013, 2018
- NASA, review panels; 2011, 2013
- **Committee of Visitors - Surface Earth Processes, National Science Foundation, 2011.**  
*The COV (8 people nationally) reviews the research core-programs in the EAR Surface Earth Processes (SEP) Section: Geobiology and Low-Temperature Geochemistry, Geomorphology and Land Use Dynamics, Hydrologic Sciences, and Sedimentary Geology and Paleobiology; the review was from 2008-2010. The report can be downloaded at:*  
[http://www.nsf.gov/od/iaa/activities/cov/geo/2011/REPORT%20OF%20THE%20COV-SEP%202008-2010\\_Submitted%2023%20June%202011.pdf](http://www.nsf.gov/od/iaa/activities/cov/geo/2011/REPORT%20OF%20THE%20COV-SEP%202008-2010_Submitted%2023%20June%202011.pdf)

### **Editorship and associated activities**

- Editorial Board, *Frontiers in Evolutionary and Genomic Microbiology* (2010 – present)
- Editor, *The Conduit*; electronic publication of the Karst Waters Institute (2009 – 2015)
- Associate Editor, *Journal of Sedimentary Research* (2004 – present)
- Advisory Board, *Journal of Cave and Karst Studies*, January 2007 – March 2010.

### **Review service for journals and proposals**

- **Occasional Proposal Reviews** (last 5 years): National Science Foundation; NASA Exobiology; American Chemical Society, Petroleum Research Fund; National Geographic; NSF EPSCoR Research Infrastructure Improvement Grants; Cave Conservancy Foundation and Cave Conservancy of the Virginias; European Young Investigator Awards (EURYI); Erwin-Schrödinger-Auslandsstipendium, Fonds zur Förderung der Wissenschaftlichen Forschung (FWF), Austria; NASA Postdoctoral Program (ORAU/ORISE), American Philosophical Society (Lewis and Clark Fund)
- **Occasional Journal Reviews** (last 5 years; all journals listed): *ISME Journal, Geochimica et Cosmochimica Acta, PLOS One, Frontiers in Microbiology, Frontiers in Genetics, Chemical Geology, Organic Geochemistry, Applied and Environmental Microbiology, Geology, Geobiology, Environmental Microbiology, Applied Geochemistry, FEMS Microbiology Ecology, Geomicrobiology Journal, Microbial Ecology, Journal of Cave and Karst Studies, Water Resources Research, International Journal of Speleology, Acta Carsologica*

## Membership in professional organizations

Explorers Club ( <b>Fellow</b> )	2015–present
Coastal and Estuarine Research Federation	2013–present
American Chemical Society	2013–present
International Society for Environmental Biogeochemistry	2013–present
International Society for Microbial Ecology	2010–present
International Symbiosis Society	2009–present
American Association for the Advancement of Science	2003–present
American Geophysical Union	2000–present
American Society of Microbiology	1998–present
Geological Society of America ( <b>Fellow</b> )	1996–present
Sigma Xi (Full Member)	1994–present
National Speleological Society (#31319Life, JM, SA, <b>Fellow</b> )	1987–present

## **RESEARCH SUPPORT AND GRANT ACTIVITIES**

### Summary (August 2004 – September 2018):

Federal & Private funding	= \$3,649,807
Other Funding (State, University)	= \$ 642,036
Total Funding	= \$4,291,843

Funding since arriving at UTK, 2011 = \$2,776,707

### Current Support

- 3) \$260,376 **NOAA RESTORE Act Science Program** “*Linking Community and Food-Web Approaches to Restoration: An Ecological Assessment of Created and Natural Marshes Influenced by River Diversions*” M. Polito, lead PI. Total award, \$2M+, with 10 other co-PIs. June 2017 – May 2021
- 2) \$849,057 **Gulf of Mexico Research Initiative RFP-IV** “*Coastal Waters Consortium*” Subcontract through Louisiana University Marine Consortium. N. Rabalais, lead PI. Total award, \$16M+, with 11 other co-PIs. 01/2015 – 12/2017.
- 1) \$794,388 **National Science Foundation** “*Dimensions: Collaborative Research: Functional diversity of chemosymbiosis in lucinid bivalves from coastal biomes*” Principal Investigator/Project Director. Total award \$1,627,102 with co-PIs Laurie Anderson, SD School of Mines and Technology, and Barbara Campbell, Clemson University. 01/01/14 – 12/31/18.

### Completed Previous Support

- 22) \$25,000 **Cave Conservancy Foundation** “*Distribution and conservation of cave biodiversity in the Valley and Ridge*” Principal Investigator. With co-PIs M. Niemiller (Univ. KY), K. Zigler (Univ. South), Danté Fenolio (San Antonio Zoo), and K. Denise Kendall (Univ. KY) 01/01/14 – 12/31/15 (no-cost extension until 6/30/16).
- 21) \$551,797 **Gulf of Mexico Research Initiative RFP-I** “*The Effects of the Macondo Oil Spill on Coastal Ecosystems*” Subcontract from Louisiana Universities Marine Consortium, Nancy Rabalais lead PI. Total award \$12,185,000, with 11 other universities. 09/2011-12/2014. No cost extension through 12/31/15.
- 20) \$38,000 **Student Technology Fee Award** 2014-2015, College of Arts and Sciences, University of Tennessee “*ICS-2100 and software upgrade.*” 07/01/14 – 06/30/15. Completed.

- 19) \$149,834 **National Science Foundation** IOS-1041941 “*EAGER: Dual Symbiosis in Lucinid Bivalves*” Lead PI with L. Anderson (LSU). 8/1/10 – 7/31/12. Transfer to UTK \$107,732; no-cost extension through 07/2014.
- 18) \$39,000 **SARIF** and \$40,000 **College of Arts and Sciences** for *Fourier Transform Infrared Spectrophotometer and Chemical Imaging system*. Lead PI with five other faculty members across three departments (EPS, Microbiology, CEE) and two colleges (Arts and Sciences and Engineering). 10/2012 – 07/2013.
- 17) \$21,361 **Institute for a Secure and Sustainable Environment (ISSE)** Equipment Acquisition Opportunity, University of Tennessee. 04/2013 – 06/2013. Sole PI.
- 16) \$278,154 **National Science Foundation** (Geobiology & Low Temperature Geochemistry Program through ARRA) EAR-0844364 “*The Speciation and Behavior of Sulfur Gases in Biogeochemical Processes*” Lead PI with A. Prange and F.J. Hormes (CAMD, LSU). 7/1/09 – 6/30/13. Subcontract to UTK for years 3 & 4 for \$49,996.
- 15) \$140,000 Northern Gulf Institute **Year 1 Block Grant from The Gulf of Mexico Research Initiative**) “*Effects of Oil, Dispersant, and Remediation-related Human Activities on Marsh Plants and Associated Insects and Mollusks,*” L. Hooper-Bui lead PI, with 5 other co-PIs. 9/10-12/11).
- 14) \$150,000 **LSU Gulf of Mexico Oil Spill Research Program (Year 1 Block Grant from The Gulf of Mexico Research Initiative)** “*Analysis of Samples Collected to Measure Effects of Stressors on Coastal Wetlands,*” R.E. Turner lead PI, with 3 other co-PIs; 0.1 month/yr. 9/10-8/11.
- 13) \$149,999 **LSU Gulf of Mexico Oil Spill Research Program (Year 1 Block Grant from The Gulf of Mexico Research Initiative)** “*Elementally Resolved Chemistry of the Evolution of the Oil Spill,*” R. Kurtz lead PI, with 6 other co-PIs. 9/10-8/11.
- 12) \$40,437 **Louisiana Board of Regents** (Traditional Enhancement) LEQSF(2010-11)-ENH-TR-06 “*Acquisition of Spectroscopy Instrumentation to Characterize Dissolved Organic Matter*” 7/1/10 – 6/30/11. Sole PI.
- 11) \$10,000 **Louisiana Board of Regents** (Pilot fund for New Research Program) NSF(2010)-PFUND-174 “*Characterization and isolation of microbially-produced dissolved organic matter in caves*” Sole PI. 1/1/10-2/28/11.
- 10) \$145,000 **Louisiana Board of Regents** (Traditional Enhancement) “*Acquisition of a Variable Pressure Scanning Electron Microscope with Cryostage and EDX for Cell, Developmental and Microbiology Research and Education*” PI: J. Larkin; Co-PIs (each with 14% credit): B. Christner, A.S. Engel, F. Galvez, C. Hart, G. King, and K. Svoboda (Dept. Biological Sciences) 7/1/09 – 6/30/10.
- 9) \$10,000 **Faculty Research Grant**, “*Sulfur Speciation using XANES Spectroscopy to Interpret Natural Sulfur Biological Signatures*” Lead PI with A. Prange, CAMD. 7/1/07 - 9/30/08.
- 8) \$130,100 **Louisiana Board of Regents** (Traditional Enhancement) “*Instrumentation Enhancement for Analytical Geochemistry Teaching and Research*” LEQSF(2007-08)-ENH-TR-13. Lead PI with H. Bao and W. Blanford, Dept. Geology & Geophysics. 7/1/07 - 6/30/08.
- 7) \$191,750 **National Science Foundation** (Systematic Biology and Biological Inventories Program) DEB-0640835 “*Collaborative Research: Epsilonproteobacteria from Terrestrial Springs and Caves*”, LSU Lead Institution (sole PI), with B.J. Campbell, Univ. Delaware, collaborating. 7/15/07 - 5/31/11. Includes \$23,000 supplement to take students to Slovenia for field research and participation in the 16th International Karstological School “Classic Karst”, Postojna, Slovenia, and support for a post-doctoral researcher.
- 6) \$109,452 **National Science Foundation** (Geobiology & Low Temperature Geochemistry Program) EAR-0544960 “*Collaborative Research: Biogeochemical controls on antimony and arsenic mobility in a siliceous hydrothermal system*” Sole PI at LSU (collaborating with U Texas-Austin) 9/15/06 - 9/14/09.
- 5) \$138,678 **Louisiana Board of Regents** (Research Competitiveness Subprogram) “*Geomicrobiology of the Bad-water Transition Zone of the Edwards Aquifer, Central Texas: Geological and ecological*

*implications of the chemoautotrophically-based groundwater ecosystem*” (LEQSF(2006-09)-RD-A-03 Sole PI) 7/1/06 - 6/30/10.

- 4) \$2,500 **Louisiana Board of Regents** “Travel Grant for Emerging Faculty” and **LSU** travel grants (Dept. Geology & Geophysics and Office of Research & Economic Development Junior Faculty Travel Program) to support attendance for invited presentation at International Mineralogical Association meeting, Kobe, Japan.
- 3) \$10,000 **Faculty Research Grant** Louisiana State University. “*Geomicrobiology of the ‘Bad-water’ Transition Zone of the Edwards Aquifer, Central Texas*” (Sole PI) 7/1/05 - 6/30/06.
- 2) \$5,000 **Council for Research**. Summer Stipend Program, Louisiana State University. “*Bad-water microbes in the Edwards Aquifer, Central Texas*” (Sole PI) 7/1/05 - 7/30/05
- 1) \$11,960 **Louisiana Board of Regents** (Pilot fund for New Research Program). “*Exploratory Research to Understand the Biogeography and Evolutionary History of Novel ‘Epsilonproteobacteria’ from Terrestrial Sulfur Springs*” NSF/LEQSF(2005)-Pfund-04 (Sole PI) 2/1/05 - 1/31/06.

## LISTING OF RESEARCH PUBLICATIONS & PRODUCTS

### Edited Books

- 5) **Engel, A.S.**, and Hatcher, Jr., R.D. (editors) (2018) Geology at Every Scale: Field Excursions for the 2018 GSA Southeastern Section Meeting in Knoxville, Tennessee. Geological Society of America Field Guide 50, 209 p.
- 4) **Engel, A.S.**, editor (2015) Microbial Life of Cave Systems. DeGruyter Publishing House series “Life in Extreme Environments.” 335 pp (14 chapters; 98 illustrations; 14 tables).  
<http://www.degruyter.com/view/product/212865>  
Won 2017 Prize for “The most significant publication about caves or a karst-related topic,” 17th International Congress of Speleology, Sydney, Australia.
- 3) Klimchouk, A., Sasowsky, I.D., Mylroie, J., Engel, S.A., **Engel, A.S.** (editors) (2014) Hypogene Cave Morphologies. Selected papers and abstracts of the symposium held February 2 through 7, 2014, San Salvador Island, Bahamas. Karst Waters Institute Special Publication 18: Leesburg, Virginia, 111 p.
- 2) **Engel, A.S.**, Engel, S.A., Moore, P.J., and DuChene, H. (editors) (2011) Carbonate Geochemistry: Reactions and Processes in Aquifers and Reservoirs, Karst Waters Institute Special Publication 16: Leesburg, Virginia, 84 p.
- 1) **Engel, A.S.**, and Engel, S.A. (editors) (2009) Select Field Guides to Cave and Karst Lands of the United States. Karst Waters Institute Special Publication 15, Leesburg, VA, 184 p.

### Peer-reviewed Journals and Scholarly Book Chapters (refereed)

<sup>G</sup> = Graduate student in my research group    <sup>U</sup> = Undergraduate student in my research group  
<sup>#</sup> = visiting student in my research group    <sup>PD</sup> = Postdoctoral research associate doing research financed on my grants  
<sup>CG</sup> = collaborating graduate student from another institution    <sup>CU</sup> = collaborating undergraduate student from another institution  
<sup>CPD</sup> = collaborating post-doctoral research associate from another institution

Google Scholar, *h*-index = 24; *i10*-index = 38; total citations >2450

- 64) Lim, S.J.<sup>CG</sup>, Davis, B.<sup>CG</sup>, Gill, D.E.<sup>CG</sup>, Engel, A.S., Anderson, L.C., Campbell, B.J. (submitted after revision) Taxonomic and functional heterogeneity of the gill microbiome in a symbiotic coastal mangrove lucinid species. *ISME Journal*.
- 63) Dorigo, L., Squartini, A., Toniello, V., Dreon, A.L., Pamio, A., Concina, G., Simonutti, V., Ruzzier, E., Perreau, M., **Engel, A.S.**, Gavinelli, F., Martinez-Sanudo, I., Mazzon, L., and Paoletti, M. (2017)

- Cave hypogetric beetles and their feeding behavior, a comparative study of *Cansiliella servardeii* and *Hadesia asamo* (Coleoptera: Leiodidae, Chelevinae, Leptodirini). *Acta Cartologica* 46 (2-3) DOI: <http://dx.doi.org/10.3986/ac.v46i2-3.4936>.
- 62) **Engel, A.S.**, Liu, C.<sup>G</sup>, Paterson, A.T., Anderson, L.C., Turner, R.E., Overton, E.B. (2017) Salt marsh bacterial communities before and after the *Deepwater Horizon* oil spill. *Applied and Environmental Microbiology*. 83:e00784-17; doi: 10.1128/AEM.00784-17
- 61) Niemiller, M.L., Zigler, K.S., Ober, K.A., Carter, E.T. **Engel, A.S.**, Moni, G., Philips, T.K., Stephen, C.D.R. (2017) Rediscovery and conservation status of six short-range endemic *Pseudanophthalmus* cave beetles (Carabidae: Trechini). *Insect Conservation and Biodiversity*. 10:495-501. doi:10.11/acad.12263.
- 60) Keenan, S.W.<sup>G</sup>, **Engel, A.S.** (2017) Early diagenesis and recrystallization of bone. *Geochimica et Cosmochimica Acta*. 196: 209-223. DOI:10.1016/j.gca.2016.09.033.
- 59) Keenan, S.W.<sup>G</sup>, **Engel, A.S.** (2017) Reconstructing diagenetic conditions of the Gray Fossil Site, Tennessee, USA. *Palaeogeography, Palaeoclimatology, Palaeoecology*. <https://doi.org/10.1016/j.palaeo.2017.01.037>.
- 58) Plenge, M.F.<sup>CG</sup>, **Engel, A.S.**, Omelon, C.R., Bennett, P.C. (2017) Thermophilic archaeal diversity and methanogenesis from El Tatio Geysir Field, Chile. *Geomicrobiology Journal*. 34: 220-230. doi:10.1080/01490451.2016.1168496.
- 57) Yun, Y.<sup>#</sup>, Wang, H., Baiying, M., Xiang, X., Zhou, J., Qiu, X., Duan, Y., **Engel, A.S.** (2016) Impact of climate change and acidification on cave and karst bacterial communities of Central China. *Frontiers of Microbiology – Extreme Microbiology*. <https://doi.org/10.3389/fmicb.2016.01955/>
- 56) Niemiller, M.L., Zigler, K.S., Hart, P.B., Kuhajda, B.R., Armbruster, J.W., Ayala, B.N., **Engel, A.S.** (2016) First record of a stygobiotic fish (Percopsiformes: Amblyopsidae: *Typhlichthys*) from the Appalachians karst region in the eastern United States. *Subterranean Biology*. 20: 39-50. doi: 10.3897/subtbiol.20.9693.
- 55) Hutchins, B.T.<sup>CG</sup>, **Engel, A.S.**, Nowlin, W.H., Schwartz, B.F. (2016) Chemolithoautotrophy supports subterranean food webs and affects regional diversity and long-term stability of stygobiont communities. *Ecology*. 97: 1530–1542. DOI: doi/10.1890/15-1129.1/.
- 54) Niemiller, M.L.<sup>CDP</sup>, Zigler, K.S., Stephen, C.D.R.<sup>CG</sup>, Carter, E.T.<sup>CG</sup>, Paterson, A.T., Taylor, S.J., **Engel, A.S.** (2016) Vertebrate fauna in caves of eastern Tennessee within the Appalachians karst region, USA. *Journal of Cave and Karst Studies*. 78:1-24. DOI:10.4311/2015LSC0109.
- 53) Zigler, K.S., Kuhajda, B.R., Ayala, B.N., Niemiller, M.L., **Engel, A.S.** (2015) First observation of Southern Cavefish (*Typhlichthys subterraneus*) east of the Cumberland Plateau. *Bulletin of the Georgia Speleological Society* 2015: 9-11.
- 52) Keenan, S.W.<sup>G</sup>, **Engel, A.S.**, Roy, A., Bovenkamp, G.L. (2015) Evaluating the consequences of diagenesis and fossilization on bioapatite lattice structure and composition. *Chemical Geology*. 413: 18-27, doi:10.1016/j.chemgeo.2015.08.005
- 51) Brannen-Donnelly, K.<sup>G</sup>, **Engel, A.S.** (2015) Bacterial diversity differences along an epigenic cave stream reveal evidence for community dynamics, succession, and stability. *Frontiers in Microbiology, section Terrestrial Microbiology*. 6: 729, <http://dx.doi.org/10.3389/fmicb.2015.00729>.
- 50) Paterson, A.T., **Engel, A.S.** (2015) Predicting bacterial diversity in caves associated with sulfuric acid speleogenesis, in Engel, A.S. (ed.) *Microbial Life of Cave Systems*. De Gruyter, 193-214.
- 49) **Engel, A.S.** (2015) Bringing microbes into focus for cave science: An introduction, in Engel, A.S. (ed.) *Microbial Life of Cave Systems*. De Gruyter, 1-22.
- 48) Turner, R.E., Overton, E.B., Ashton, B.M.<sup>CPD</sup>, Miles, M.S., McClenachan, G., Hooper-Bui, L., **Engel, A.S.**, Swenson, E.M., Lee, J.M., Milan, C.S., Gao, H. (2014) Distribution and recovery trajectory of Macondo (Mississippi Canyon 252) oil in Louisiana salt marshes. *Marine Pollution Bulletin*. <http://dx.doi.org/10.1016/j.marpolbul.2014.08.011>.
- 47) Headd, B.<sup>G</sup>, **Engel, A.S.** (2014) Biogeographic congruency among bacterial communities from terrestrial sulfidic springs. *Frontiers in Microbiology, section Extreme Microbiology*. DOI:10.3389/fmicb.2014.00473.

- 46) Hooper-Bui, L., Rabalais, N.N., **Engel, A.S.**, Turner, R.E., McClenachan, G., Robert, B., Overton, E.B., Justic, D., Strudivant, K., Brown, K., Conover, J. (2014) Overview of Research into the coastal effects of the Macondo Blowout from the Coastal Waters Consortium: A GoMRI Consortium. *International Oil Spill Conference Proceedings*. American Petroleum Institute. 1:604-617. <http://dx.doi.org/10.7901/2169-3358-2014.1.604>
- 45) **Engel, A.S.**, Gupta, A.<sup>G</sup> (2014) Regime shift in sandy beach microbial communities following *Deepwater Horizon* oil spill remediation efforts. *PLoS One*. 9(7): e102934, DOI:10.1371/journal.pone.0102934.
- 44) **Engel, A.S.**, Bovenkamp, G.L.<sup>CPD</sup>, Prange, A., Hormes, F.J. (2014) In situ speciation of sulfur vapors using X-ray absorption near edge structure spectroscopy. *Chemical Geology*. 380: 1-6. DOI:10.1016/j.chemgeo.2014.04.019.
- 43) Yin, J., Rekepalli, B., Patel, P. Drennen, C.<sup>G</sup>, **Engel, A.S.** (2014) Instrumenting genomic sequence analysis pipeline mothur on shared memory architecture. XSEDE '14 Proceedings of the 2014 Annual Conference on Extreme Science and Engineering Discovery Environment, ACM, New York, New York; DOI:10.1145/2616498.2616505.
- 42) Hutchins, B.<sup>CG</sup>, Schwartz, B., **Engel, A.S.** (2013) Environmental controls on organic matter production and transport across surface-subsurface and geochemical boundaries in the Edwards Aquifer, Texas, USA. *Acta Carsologica* 42/2-3: 245–259. DOI:10.3986/ac.v42i2-3.666.
- 41) Keenan, S.<sup>G</sup>, **Engel, A.S.**, Elsey, R.M. (2013) The alligator gut microbiome and implications for archosaur symbiosis. *Scientific Reports*. 3:2877. DOI:10.1038/srep02877.
- 40) **Engel, A.S.**, Paoletti, M.G., Beggio, M.<sup>CU</sup>, Dorigo, L., Pamio, A., Gomiero, T., Furlan, C., Brilli, M., Bertoni, R., Dreon, A.L. (2013) Comparative microbial community composition from secondary carbonate (moonmilk) deposits: implications for the *Cansiliella servadeii* cave hydropetric food web. *International Journal of Speleology*. 42: 181-192. DOI:10.5038/1827-806X.42.3.2.
- 39) Paoletti, M.G., Mazzon, L., Sanudo, I.Z., Simonato, M., Beggio, M., Dreon, A.L., Pamio, A., Brilli, M., Dorigo, L., **Engel, A.S.**, Tondello, A., Baldan, B., Concheri, G., Squartini, A<sup>†</sup> (2013) A unique midgut-associated bacterial community hosted by the cave beetle *Cansiliella servadeii* (Coleoptera: Leptodirini) reveals parallel phylogenetic divergences from universal gut-specific ancestors. *BMC Microbiology*. 13:129. DOI:10.1186/1471-2180-13-129.
- 38) Headd, B.<sup>G</sup>, **Engel, A.S.** (2013) Evidence for niche partitioning revealed by the distribution of sulfur oxidation genes collected from areas of a terrestrial sulfidic spring with differing geochemical conditions. *Applied and Environmental Microbiology*. 79: 1171-1182. DOI:10.1128/AEM.02812-12.
- 37) Gray, C.J.<sup>G</sup> and **Engel, A.S.** (2013) Microbial diversity and impact on carbonate geochemistry across a changing geochemical gradient. *The ISME Journal*. 7: 325:337. DOI:10.1038/ismej.2012.105.
- 36) **Engel, A.S.**, Johnson, L.R.<sup>G</sup>, Porter, M.L.<sup>PD</sup> (2013) Arsenite oxidase gene diversity among Chloroflexi and Proteobacteria from El Tatio Geysir Field, Chile. *FEMS Microbiology Ecology*. 83: 745–756. DOI: 10.1111/1574-6941.12030.
- 35) Lee, N.M., Liebl, W.E., **Engel, A.S.**, Porter, M.L. (2013) Cave biofilm metagenomics. In: Nelson K. (ed.) *Encyclopedia of Metagenomics*: Springer-Verlag Berlin Heidelberg, SpringerReference [www.springerreference.com](http://www.springerreference.com). DOI: 10.1007/978-1-4614-6418-1\_718-2
- 34) Green-Garcia, A.M.<sup>G</sup> and **Engel, A.S.** (2012) Bacterial diversity of siliciclastic sediments in a *Thalassia testudinum* meadow and the implications for *Luciniscas nassula* chemosymbiosis. *Estuarine, Coastal and Shelf Science*. 112: 153-16. <http://dx.doi.org/10.1016/j.ecss.2012.07.010>.
- 33) Rossmassler, K.<sup>CG</sup>, **Engel, A.S.**, Twing, K.<sup>CG</sup>, Hanson, T.E, Campbell, B.J (2012) Drivers of *Epsilonproteobacteria* community composition in sulfidic caves and springs. *FEMS Microbiology Ecology*. 79:421-432. DOI:10.1111/j.1574-6941.2011.01231.x
- 32) **Engel, A.S.** (2012) Microbes, in Culver, D. and W. White, (eds.) *Encyclopedia of Caves*. 2<sup>nd</sup> Edition, p. 490-499. (peer-reviewed)

- 31) **Engel, A.S.** (2012) Chemoautotrophy, *in* Culver, D. and W. White, (eds.) Encyclopedia of Caves. 2<sup>nd</sup> Edition. p. 125-134. (peer-reviewed)
- 30) Lee, N.M., Meisinger, D.B., Aubrecht, R., Kovacic, L., Saiz-Jimenez, C., Baskar, S.R., Schleifer, K.-H., Liebl, W., Porter, M.L., **Engel, A.S.** (2012) Caves and karst environments, *in* Bell, E. (ed.) Life at Extremes: Environments, Organisms and Strategies for Survival. CAB International Publishing. p. 320-344. (peer-reviewed)
- 29) **Engel, A.S.**, and Randall, K.<sup>G</sup> (2011) Experimental evidence for microbially-mediated carbonate dissolution from the saline water zone of the Edwards Aquifer, Central Texas. *Geomicrobiology Journal*. 28(3): 313-327.
- 28) Paoletti, M.G., Beggio, M.<sup>CG</sup>, Dreon, A.L., Pamio, A., Gomiero, T., Brillì, M., Dorigo L., Concheri G., Squartini A., **Engel, A.S.** (2011) A new foodweb based on microbes in calcitic caves: The *Cansiliella* (beetles) case in Northern Italy. *International Journal of Speleology*. 40: 45-52. DOI:10.5038/1827-806X.40.1.6.
- 27) **Engel, A.S.** (2011) Karst ecosystems, *in* Reitner, J., and Thiel, V. (eds.), Encyclopedia of Geobiology, Springer Encyclopedia of Earth Sciences Series (EESS, formerly Kluwer Edition), Berlin Encyclopedia of Earth Sciences Series, pp. 521-53. DOI: 10.1007/978-1-4020-9212-1. (peer-reviewed)
- 26) **Engel, A.S.**, Meisinger, D.B.<sup>CG</sup>, Porter, M.L.<sup>PD</sup>, Payn, R.<sup>CPD</sup>, Schmid, M., Stern, L.A., Schleifer, K.-H., Lee, N.M. (2010) Linking phylogenetic and functional diversity to nutrient spiraling in microbial mats from Lower Kane Cave (USA). *The ISME Journal*. 4:98–110; DOI:10.1038/ismej.2009.91.
- 25) Birdwell, J.E.<sup>PD</sup>, and **Engel, A.S.** (2010) Characterization of dissolved organic matter in cave and spring waters using UV-Vis absorbance and fluorescence spectroscopies. *Organic Geochemistry*. 41: 270-280.
- 24) **Engel, A.S.** (2010) Microbial diversity of cave ecosystems, *in* Barton, L., Mandl, M., and Loy, A. (eds.), Geomicrobiology: Molecular & Environmental Perspectives, Springer. p. 219-238. DOI:10.1007/978-90-481-9204-5\_10. (peer-reviewed)
- 23) **Engel, A.S.**, and Engel, S.A. (2009) A field guide for the karst of Carter Caves State Resort Park and the surrounding area, northeastern Kentucky, *in* Engel, A.S. and Engel, S.A. (editors) Select Field Guides to Cave and Karst Lands of the United States: Twenty years of science and exploration. Karst Waters Institute Special Publication 15: Leesburg, Virginia, p. 87-109.
- 22) Birdwell, J.E.<sup>PD</sup> and **Engel, A.S.** (2009) Variability in terrestrial and microbial contributions to dissolved organic matter fluorescence in the Edwards Aquifer, Central Texas. *Journal of Cave and Karst Studies*. 71: 144-156. (includes published cover photograph for the issue)
- 21) Landrum, J.T.<sup>CG</sup>, Bennett, P.C., **Engel, A.S.**, Alsina, M.<sup>CG</sup>, Pastén, P., Milliken, K. (2009) Partitioning geochemistry of arsenic and antimony, El Tatio Geyser Field, Chile. *Applied Geochemistry*. 24: 664-676. DOI:10.1016/j.apgeochem.2008.12.024
- 20) Porter, M.L.<sup>\*PD</sup>, **Engel, A.S.\***, Kane, T.C.<sup>+</sup>, Kinkle, B.K. (2009) Productivity-diversity relationships from chemolithoautotrophically based sulfidic karst systems. *International Journal of Speleology*. 38(1): 27-40 (\*equal contribution; +deceased).
- 19) **Engel, A.S.** (2009) Sulfur-rich karst systems, *in* Palmer, A.N. and Palmer, M.V. (eds.), Caves and Karst of the USA. National Speleological Society: Huntsville, Alabama, p. 404.
- 18) Porter, M.L.<sup>PD</sup> and **Engel, A.S.** (2008) Diversity of uncultured *Epsilonproteobacteria* from terrestrial sulfidic caves and springs. *Applied and Environmental Microbiology*. 74(15): 4973-4977. DOI:10.1128/AEM.02915-07
- 17) Porter, M.L.<sup>PD</sup>, and **Engel, A.S.** (2008) Balancing the conservation needs of sulphidic caves and karst with tourism, economic development, and scientific study: *Cave and Karst Science*. 35:19-24.
- 16) **Engel, A.S.** and Northup, D.E. (2008) Focus group on caves and karst as model systems in geomicrobiology, *in* Martin, J. and White, W.B. (eds.), Frontiers in Karst Research, Karst Waters Institute Special Publication 13: Leesburg, Virginia, p. 90-95.

- 15) **Engel, A.S.**, and Northup, D.E. (2008) Caves and karst as model systems for advancing the microbial sciences, in Martin, J. and White, W.B. (eds.), Frontiers in Karst Research, Karst Waters Institute Special Publication 13, Leesburg, Virginia: 37-48. (peer-reviewed)
- 14) **Engel, A.S.** (2007) Observations on the biodiversity of sulfidic karst habitats. *Journal of Cave and Karst Studies*. 69(1): 187-206.
- 13) **Engel, A.S.**, Lichtenberg, H.<sup>CG</sup>, Prange, A., Hormes, J. (2007) Speciation of sulfur from naturally-occurring, filamentous microbial mats from sulfidic cave springs using x-ray absorption near edge spectroscopy. *FEMS Microbiology Letters*. 269(1): 54-62. DOI:10.1111/j.1574-6968.2006.00600.x.
- 12) Meisinger, D.B.<sup>\*CG</sup>, Zimmermann, J.<sup>\*CPD</sup>, Ludwig, W., Schleifer, K.-H., Wanner, G., Schmid, M., Bennett, P.C., **Engel, A.S.**, and Lee, N. (2007) *In situ* detection of novel *Acidobacteria* in microbial mats from a chemoautotrophically-based cave ecosystem. *Environmental Microbiology*. 9(6): 1523-1534. (\* equal contribution) DOI:10.1111/j.1462-2920.2007.01271.x. (included published cover of the issue)
- 11) Bennett, P.C., and **Engel, A.S.** (2007) Microbial sulfur cycling in a sulfidic cave, in Bullen, T.D., and Wang, Y. (eds.), Water-Rock Interaction, Taylor & Francis, London: 853-858.
- 10) Campbell, B.J.<sup>\*</sup>, **Engel, A.S.**<sup>\*</sup>, Porter, M.L.<sup>CPD</sup>, and Takai, K. (2006) The versatile *Epsilon-proteobacteria*: Key players in sulphidic habitats. *Nature Reviews Microbiology*. 4:458-468. (\* equal contribution)
- 9) Phoenix, V.R.<sup>CPD</sup>, Bennett, P.C., **Engel, A. S.**, Tyler, S.W., and Ferris F.G. (2006) Chilean high-altitude hot spring sinters: a model system for UV screening mechanisms by early Precambrian cyanobacteria. *Geobiology*. 4: 15-28.
- 8) Bennett, P.C., **Engel, A.S.**, Roberts, J.A. (2006) Counting and imaging bacteria on mineral surfaces, in Maurice, P.A., Warren, L.A. (eds.), Methods of Investigating Microbial-Mineral Interactions, CMS Workshop Lectures, Vol. 14, The Clay Mineral Society, Chantilly, Virginia: 37-77. (reviewed)
- 7) **Engel, A.S.** (2005) Chemoautotrophy, in Culver, D. and W. White, (eds.) Encyclopedia of Caves. p. 90-102. (peer-reviewed)
- 6) Bennett, P.C., and **Engel, A.S.** (2005) Microbial contributions to karstification, in Gadd, G.M., Semple, K.T., and Lappin-Scott, H.M. (eds.), Micro-organisms and Earth Systems – Advances in Geomicrobiology, Society for General Microbiology (SGM) Symposium 65, Cambridge University Press: 345-363. (peer-reviewed)
- 5) **Engel, A.S.**, Porter, M.L., Stern, L.A., Quinlan, S.<sup>CU</sup>, Bennett, P.C. (2004) Bacterial diversity and ecosystem function of filamentous microbial mats from aphotic (cave) sulfidic springs dominated by chemolithoautotrophic “*Epsilonproteobacteria*.” *FEMS Microbiology Ecology*. 51: 31-53.
- 4) **Engel, A.S.**, Stern, L.A., and Bennett, P.C. (2004) Microbial contributions to cave formation: new insights into sulfuric acid speleogenesis. *Geology*. 32(5): 369-372.
- 3) **Engel, A.S.**, Lee, N., Porter, M.L., Stern, L.A., Bennett, P.C., and Wagner, M. (2003) Filamentous “*Epsilonproteobacteria*” dominate microbial mats in sulfidic caves. *Applied and Environmental Microbiology*. 69(9): 5503-5511.
- 2) **Engel, A.S.**, Porter, M.L., Kinkle, B.K., and Kane, T.C. (2001) Ecological assessment and geological significance of microbial communities from Cesspool Cave, Virginia. *Geomicrobiology Journal*. 18:259-274.
- 1) Vlasceanu, L., Sarbu, S., **Engel, A.S.**, and Kinkle, B.K. (2000) Acidic, cave-wall biofilms from the Frasassi Caves, Italy. *Geomicrobiology Journal*. 17:125-139.

### **In Review Manuscripts**

- 3) **Engel, A.S.** (IN REVIEW) Chemolithoautotrophy, in Culver, D., Pipan, T., and W. White, (eds.) Encyclopedia of Caves, 3<sup>rd</sup> edition. (peer-reviewed)
- 2) **Engel, A.S.** (IN REVIEW) Microbes, in Culver, D., Pipan, T., and W. White, (eds.) Encyclopedia of Caves, 3<sup>rd</sup> edition. (peer-reviewed).
- 1) Mulec, J.<sup>PD</sup>, **Engel, A.S.** (IN REVIEW) Karst spring microbial mat microeukaryotic diversity differs across an oxygen-sulphide ecocline and reveals potential for novel taxa

## Editor-reviewed, Scholarly Conference Proceedings, and Other Publications

- 25) **Engel, A.S.**, Niemiller, M.L. (2018) Landowner's guide to biological resources and biodiversity in Tennessee caves. University of Tennessee Institute of Agriculture Extension publication W453-D. <<https://extension.tennessee.edu/publications/Documents/W453-D.pdf> >
- 24) **Engel, A.S.**, Niemiller, M.L., Zigler, K.S., Stephen, C.D.R., Carter, E.T., Paterson, A.T., Keenan, S.W., Taylor, S.J. (2017) Invertebrate and vertebrate cave fauna records for the Appalachian Valley and Ridge, in Moore K., White S. (eds). Proceedings of the 17<sup>th</sup> International Congress of Speleology, July, Sydney, Australia, Volume 1, Australian Speleological Federation Inc. Sydney, p. 82-86.
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- 22) **Engel, A.S.** (2013) The caves that microbes built – The frontier of cave and karst science, in Filippi, M. and Bosák, P. (eds.). Proceedings of the 16th International Congress of Speleology, July 21-28, Brno, Czech Republic. Vol. 1, p. 22-25. Extended abstract for invited *plenary lecture*.
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- 18) **Engel, A.S.** (2010) Book Review - Cave Biology: Life in Darkness. Aldemaro Romero: *Integrative and Comparative Biology*. 50 (4): 689-691. doi: 10.1093/icb/icq067 First published online: June 4, 2010.
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## PUBLISHED DATASETS

*The following are published (and publically-accessible) curated datasets, past 5 years only:*

- 1) **Engel, A.S.** (2012) Bacterial community diversity of sandy beaches before and after the Deepwater Horizon oil spill in the Gulf of Mexico (113 experiments); NCBI BioProject Accession: PRJNA170912 <http://www.ncbi.nlm.nih.gov/bioproject/PRJNA170912>
- 2) Headd, B., and **Engel, A.S.** (2012) Bacterial community diversity of Rattlesnake spring outflow channel (30 experiments); NCBI BioProject Accession: PRJNA172872 <http://www.ncbi.nlm.nih.gov/bioproject/PRJNA172872>
- 3) **Engel, A.S.** (2012) Karst groundwater from Edwards Aquifer Targeted Locus (Loci); 8 experiment; NCBI BioProject Accession PRJNA82945 <http://www.ncbi.nlm.nih.gov/bioproject/PRJNA82945>
- 4) Keenan, S.W., and **Engel, A.S.** (2012) Alligator gastrointestinal tract Targeted Locus (Loci) (35 experiments): NCBI BioProject Accession PRJNA183679 <http://www.ncbi.nlm.nih.gov/bioproject/PRJNA183679>
- 5) **Engel, A.S.**, Paoletti, M., Beggio, M., Dorigo, L., Pamio, A., Dreon, A.L., Furlan, C. and Squartini, A. (2013) Submissions to NCBI GenBank for 16S rRNA genes associated with uncultured bacterial clones from two different moonmilk cave sediment deposits, Italy, accession numbers EU431666 – EU431834 (169 sequences) and KC255251 – KC255375 (125 sequences); <http://www.ncbi.nlm.nih.gov/>
- 6) **Engel, A.S.** (2013) Submissions to NCBI GenBank for 16S rRNA genes associated with uncultured bacterial clones from El Tatio Geyser Field, Chile, accession numbers GU-437233 – GU437738 (506 sequences); <http://www.ncbi.nlm.nih.gov/>

- 7) Gray, C.J., and **Engel, A.S.** (2013) Submissions to NCBI GenBank for 16S rRNA genes associated with uncultured bacterial clones from various wells in the Edwards Aquifer, Texas, accession numbers HM066203 to HM066729 (527 sequences); <http://www.ncbi.nlm.nih.gov/>
- 8) **Engel, A.S.** (2013) Submission to NCBI GenBank for *aioA* gene sequences (arsenite oxidase) retrieved from uncultured bacterial clones from El Tatio Geysir Field, Chile, accession numbers GU437739 – GU437822 (84 sequences); <http://www.ncbi.nlm.nih.gov/>
- 9) Headd, B., and **Engel, A.S.** (2013) Terrestrial Sulfidic Springs Targeted Locus (Loci) (7 experiments); BioProject Accession: PRJNA204163  
<http://www.ncbi.nlm.nih.gov/bioproject/PRJNA204163>
- 10) Headd, B., **Engel, A.S.**, and Maas, B. (2013) Submission to NCBI GenBank for *soxB* gene sequences (sulfur oxidation pathways) retrieved from uncultured bacterial clones (411 sequences) from Rattlesnake Spring, Oklahoma, accession numbers JX471149 – JX471559;  
<http://www.ncbi.nlm.nih.gov/>
- 11) **Engel, A.S.** (2013) Coastal marshes (Louisiana) Targeted Locus (Loci) (83 experiments); BioProject Accession: PRJNA232457 <http://www.ncbi.nlm.nih.gov/bioproject/PRJNA232457>
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- 13) **Engel, A.S.**, and Beeler, S. (2015) Fluorescence data supporting experimental study of marsh sediment microbial community degradation of *S. alterniflora*-derived dissolved organic matter. doi:10.7266/N7ZW1HVV
- 14) Engel, A.S., and Beeler, S. (2015) CWC: Bacterial diversity data supporting experimental study of marsh sediment microbial community degradation of *S. alterniflora*-derived dissolved organic matter. doi:10.7266/N7V40S4V
- 15) Engel, A.S. (2015) Coastal marsh (Louisiana) microcosm experiments Targeted Locus (Loci) (40 experiments); NCBI BioProject Accession PRJNA270760.  
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- 16) Brannen-Donnelly, K., and Engel, A.S. (2015) Bacterial diversity and succession along an epigenic cave stream (48 experiments); NCBI BioProject Accession PRJNA283038;  
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- 19) **Engel, A.** (2015) Marsh soil profiles of Carbon/Nitrogen and  $\delta^{13}\text{C}$ /  $\delta^{15}\text{N}$ , Grand Isle, Port Sulphur, Terrebonne Bay, Louisiana, May-October 2013. Coastal Waters Consortium (CWC). doi:10.7266/N7DZ067D
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- 21) **Engel, A.S.**, Doty, T.W. (2015) Coastal mangrove sediment and lucinid bivalve (*Phacoides pectinatus*) microbiomes (Florida) Targeted Locus (Loci) raw sequence reads targeted loci (78 experiments); NCBI BioProject Accession PRJNA300417;  
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- 22) **Engel, A.S.**, Goemann, A. (2015) Coastal seagrass sediment and lucinid bivalve (*Stewartia floridana*, *Luciniscia nassula*, *Ctena orbiculata*) microbiomes (Florida) Environment targeted loci raw sequence reads (71 experiments); NCBI BioProject Accession PRJNA302122;  
<http://www.ncbi.nlm.nih.gov/bioproject/302122>

- 23) **Engel, A.S.**, and Paterson, A.T. (2016) Bacterial diversity data supporting study of changes in Louisiana marsh microbial communities after the Deepwater Horizon oil spill, May 2010-September 2011, August 2013. DOI: 10.7266/N74F1NNW
- 24) **Engel, A.S.** (2016) Sediment properties of Louisiana marshes, 2010-2011, 2013. CWC. DOI:10.7266/N7Q23X55
- 25) **Engel, A.S.** (2016) Field data supporting study of temporal changes in microbial diversity from Louisiana marsh sediment and water, October 2012. CWC. DOI:10.7266/N70V89RN
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- 28) **Engel, A.** (2016) Field data supporting study of temporal changes in microbial diversity from Louisiana marsh sediment, October 2013. CWC. DOI: 10.7266/N7RB72JB
- 29) **Engel, A.** (2016). Field data supporting study of temporal changes in microbial diversity from Louisiana marsh sediment, May 2014. CWC. DOI: 10.7266/N7XW4GQG
- 30) **Engel, A.S.** (2016) Field data supporting study of temporal changes in microbial diversity from Louisiana marsh sediment and water, October 2014. CWC. DOI:10.7266/N7ZK5DMW
- 31) **Engel, A.**, and Paterson, A.T. (2016) June 2012 water column bacterial diversity data supporting changes in Louisiana marsh microbial communities after the Deepwater Horizon oil spill. CWC. doi:10.7266/N7QC01DH
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- 33) **Engel, A.**, and Paterson, A.T. (2016) June 2012 sediment bacterial diversity data supporting changes in Louisiana marsh microbial communities after the Deepwater Horizon Oil Spill. CWC. doi:10.7266/N7GT5K39
- 34) **Engel, A.**, and Paterson, A.T. (2016) CWC: October 2012 sediment bacterial diversity data supporting changes in Louisiana marsh microbial communities after the Deepwater Horizon oil spill. CWC. doi:10.7266/N7C24TCW
- 35) **Engel, A.S.**, and Paterson, A.T. (2016) Changes in Microbial Diversity Over Tidal Cycles (Analog Site, Dauphin Island Beach). CWC. DOI: 10.7266/N7HT2M7P
- 36) **Engel, A.S.**, and Paterson, A.T. (2016) October 2013 bacterial diversity data supporting changes in Louisiana marsh sediment microbial communities after the Deepwater Horizon oil spill. CWC. DOI: 10.7266/N77D2S2W
- 37) **Engel, A.S.**, and Paterson, A.T. (2016) May 2014 bacterial diversity data supporting changes in Louisiana marsh sediment microbial communities after the Deepwater Horizon oil spill. CWC. UDI: R1.x139.143:0044
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- 39) **Engel, A.S.**, and Paterson, A.T. (2016) October 2014 bacterial diversity data supporting changes in Louisiana marsh sediment microbial communities after the Deepwater Horizon oil spill. CWC. UDI: R1.x139.143:0045
- 40) **Engel, A.S.**, and Paterson, A.T. (2016) Aqueous geochemistry of Louisiana marshes, June 2012 - October 2014. CWC. UDI: R1.x139.143:0056
- 41) **Engel, A.S.** (2016) Sediment properties of Louisiana marshes, 2012-2014. CWC. UDI: R1.x139.143:0042
- 42) **Engel, A.S.** (2016) Field data supporting study of temporal changes in microbial diversity from Louisiana marsh sediment, May 2015. Coastal Waters Consortium II (CWC II). UDI: R4.x264.198:0001

- 43) **Engel, A.S.** (2017) Coastal marsh sediment *alkB*, *pmoA*, and P450 gene survey, raw sequence reads targeted loci (57 experiments); NCBI BioProject Accession PRJNA382817; <http://www.ncbi.nlm.nih.gov/bioproject/PRJNA382817>
- 44) **Engel, A.S.** (2018) Bahamas lucinid metagenomes (42 metagenomes); NCBI BioProject Accession PRJNA481370; <http://www.ncbi.nlm.nih.gov/bioproject/481370>

## **PARTICIPATION IN PROFESSIONAL MEETINGS, CONFERENCES, & WORKSHOPS**

\* = denotes presentation I gave or will give; underlined names are my current or former students or postdocs,  
 G = graduate, U = undergraduate, PD = postdoctoral research; REU = REU student from summer research program;  
 CG = collaborating graduate student at other university; CPD = collaborating post-doctoral researcher

### **Original Work Presented and Published as Scientific Abstracts – abbreviated list**

#### To occur in 2019

- 210) **Engel, A.S.\***, Paterson, A.T., Roberts, B., Martin, C.W., Jensen, O., Lopez-Duarte, P. Olin, J., Hooper-Bui, L., Rabalais, N., Swenson, E., Polito, M.J. (2019) Addition of microbial community composition in the evaluation of habitat suitability for tidal marsh restoration projects: A case study from the Lake Hermitage Marsh Creation Project, Plaquemines Parish, Louisiana. Gulf of Mexico Oil Spill and Ecosystem Science Conference; February 4-7, 2019, New Orleans, LA.
- 209) **Engel, A.S.\***, Paterson, A.T. (2019) Teasing apart the influences of plant type, soil properties, inundation history, and weathered oil on marsh microbial communities through time. Gulf of Mexico Oil Spill and Ecosystem Science Conference; February 4-7, 2019, New Orleans, LA.

#### 2018

- 208) **Engel, A.S.\***, Hutchins, B., Nowlin, W., Schwartz, B.F. (2018) Profiling the functional diversity of microbial communities to understand the development and maintenance of the Edwards Aquifer ecosystem. Geological Society of America Abstracts with Programs. Indianapolis, IN; 50(6), doi: 10.1130/abs/2018AM-322716.
- 207) Paterson, A.T., Long, B.L.<sup>CG</sup>, Kokesh, B.S.<sup>CG</sup>, Anderson, L.C., **Engel, A.S.** (2018) Anchialine lakes serve as novel habitats for relict taxa, including chemosymbiotic marine bivalves. Geological Society of America Abstracts with Programs, Indianapolis, IN; 50(6) doi: 10.1130/abs/2018AM-323431.
- 206) Slay, M.E., Porter, M.L., Slay, C., **Engel, A.S.** (2018) Preliminary results from a survey of lava tube caves in the southwest region of the Ka'ū district of the Big Island, Hawai'i. 24th International Conference on Subterranean Biology, 20-24 August 2018, ARPHA Conference Abstracts 1: e29874. <https://doi.org/10.3897/aca.1.e29874>.
- 205) **Engel, A.S.\***, Porter, M.L., Slay, M.E., Slay, C.M. (2018) Fluids associated with deep roots in lava tubes and their food web implications. National Speleological Society convention, Helena, Montana, July 30 – August 3. (oral presentation)
- 204) **Harmon, A.S., Engel, A.S.**, Paterson, A.T. (2018) Evaluating anthropogenic impacts and best management practices for remediation of a karst watershed, Carter Caves State Resort Park, Kentucky. National Speleological Society convention, Helena, Montana, July 30 – August 3. (oral presentation)
- 203) **Nichols, H.**<sup>REU</sup>, Paterson, A.T., **Engel, A.S.** (2018) Microbiology of anthropogenically impacted caves in the Appalachian Valley and Ridge region, Tennessee. National Speleological Society convention, Helena, Montana, July 30 – August 3. (oral presentation)
- 202) Lim, J.<sup>CG</sup>, Alexander, L.C.<sup>CU</sup>, **Engel, A.S.**, Anderson, L.C., Campbell, B. (2018) Novel symbiont species diversity within a *Ctena orbiculata* (Bivalvia: Lucinidae) population. American Society for Microbiology Microbe conference, June 7-11, Atlanta, GA.

- 201) Nachman, E.<sup>CU</sup>, Walton, J.<sup>CU</sup>, Lim, S.J.<sup>CG</sup>, Engel, A.S., Anderson, L.C., Campbell, B.J. (2018) Functional diversity of the *Phacoides pectinatus* (Bivalvia: Lucinidae) gill microbiome. American Society for Microbiology Microbe conference, June 7-11, Atlanta, GA.
- 200) **Engel, A.S.\***, Niemiller, M.L., Zigler, K.S., Ayala, B.N.<sup>CU</sup>, Hart, P.B.<sup>CG</sup>, Kuhajda, B.R., Armbruster, J.W. (2018) Reconstructing Late Pliocene through Early Pleistocene ancestral river drainage basins in the Interior Low Plateau and Appalachians karst regions to understand the evolutionary history of *Typhlichthys subterraneus* (Percopsiformes: Amblyopsidae). Geological Society of America, Southeastern section meeting, Knoxville, TN, Abstracts with Programs. Vol. 50, No. 3, doi: 10.1130/abs/2018SE-313063 (oral presentation)
- 199) Niemiller, M.L., Zigler, K.S., Carter, E.T.<sup>CG</sup>, Stephen, C.D.R.<sup>CG</sup>, **Engel, A.S.**, Shear, W.A. (2018) Influence of geological barriers on the phylogeography and dispersal of cave-adapted *Scoterpes* millipeded (Chordeumatida: Trichopetalidae) in the Interior Low Plateau and Appalachians karst regions. Geological Society of America, Southeastern section meeting, Knoxville, TN, Abstracts with Programs. Vol. 50, No. 3, doi: 10.1130/abs/2018SE-312727. (oral presentation)
- 198) Paterson, A.T., Long, B.L.<sup>CG</sup>, Lim, S.J.<sup>CG</sup>, Kokesh, B.S.<sup>CG</sup>, Harmon, A., Anderson, L.C., Campbell, B.J., **Engel, A.S.** (2018) Intraspecific variability of valve morphology and endosymbiont diversity among Lucinidae from shallow marine habitats. Geological Society of America, Southeastern section meeting, Knoxville, TN, Abstracts with Programs. Vol. 50, No. 3, doi: 10.1130/abs/2018SE-313129

## 2017

- 197) Niemiller, M.L., Zigler, K.S., Ober, K.A., Carter, E.T.<sup>CG</sup>, **Engel, A.S.**, Moni, G., Philips, T.K., Stephen, C.D.R.<sup>CG</sup> (2017) Rediscovery and conservation status of short-range endemic *Pseudanophthalmus* cave beetles (Carabidae: Trechini) in Tennessee, Alabama, and Georgia, in Niemiller, M.L., Slay, M.E., Bitting, C.J. (eds.). Proceedings of the 22<sup>nd</sup> National Cave and Karst Management Symposium, Eureka Springs, Arkansas, p. 34.
- 196) Paterson, A.T., Fortier, C.M.<sup>G</sup>, Long, B.<sup>CG</sup>, Kokesh, B.<sup>CG</sup>, Lim, S.J.<sup>CG</sup>, Campbell, B.J., Anderson, L.C., **Engel, A.S.** (2017) Redox-stratified bacterial communities in sediments associated with multiple lucinid bivalve species: implications for symbiosis in changing coastal habitats. AGU annual meeting, New Orleans, LA, Dec 11-15, 2017. (oral presentation)
- 195) Fortier, C.M.<sup>G</sup>, Paterson, A., **Engel, A.S.** (2017) Ecology and endosymbiont diversity of six co-occurring bivalves (Bivalvia: Lucinidae) from an anthropogenically-impacted tidal flat on Sugarloaf Key, Florida Keys. GSA Annual Meeting, Seattle, WA, Oct 22-25, 2017. (poster)
- 194) Kokesh, B.S.<sup>CG</sup>, Anderson, L.C., **Engel, A.S.** (2017) Geometric morphometric analysis of *Ctena orbiculata* (Lucinidae: Bivalvia) from marine lakes of San Salvador island, The Bahamas, and surrounding coastal environments. GSA Annual Meeting, Seattle, WA, Oct 22-25, 2017. (poster)
- 193) **Engel, A.S.\***, Lim, S.J.<sup>CG</sup>, Paterson, A.T., Payne, Z.<sup>U</sup>, Scheffler, S.<sup>U</sup>, Tran, A.<sup>U</sup>, Campbell, B.J., Anderson, L.C. (2017) Taxonomic and metabolic complexity among lucinid bivalve endosymbionts. 15<sup>th</sup> Symposium on Aquatic Microbial Ecology, Zagreb, Croatia, Sept. 3-8, 2017. (poster)
- 192) Paterson, A.T., Kolodny, O., Na'aman, I., Frumkin, A., **Engel, A.S.\*** (2017) Environmental metagenomics of the chemolithoautotrophically based ecosystem of Ayalon Cave, Israel. International Congress of Speleology, Australia. July, 2017. (oral presentation)
- 191) **Engel, A.S.\***, Paterson, A.T., Niemiller, M.L. (2017) Biogeography of microbes from caves in the Interior Low Plateau and Appalachians karst regions. International Congress of Speleology, Australia. July, 2017. (oral presentation)
- 190) Scheffler, S.<sup>U</sup>, Paterson, A.T., Long, B.<sup>CG</sup>, Anderson, L., **Engel, A.S.** (2017) Microbial communities from gill tissues and patchy seagrass habitat of a chemosymbiotic bivalve, *Stewartia floridana*. 4<sup>th</sup> Southeastern Biogeochemistry Symposium, Athens, GA, March 31-April 2. (poster presentation)
- 189) Payne, Z.<sup>U</sup>, Kokesh, B.<sup>CG</sup>, Paterson, A.T., Anderson, L., **Engel, A.S.** (2017) Endosymbiont diversity and shell morphology differences for *Ctena orbiculata* (Lucinidae: Bivalvia). Southeastern Biogeochemistry Symposium, Athens, GA, March 31-April 2. (poster)

- 188) Lim, S.J., **Engel, A.S.**, Anderson, L.A., Campbell, B.J. (2017) Novel co-symbiosis in the lucinid bivalve *Phacoides pectinatus*. American Society for Microbiology, New Orleans, LA. (poster)
- 187) **Jiang, X.**<sup>PD</sup>, Paterson, A.T., **Engel, A.S.** (2017) Multi-year metagenomic assessment of coastal marsh microbial communities impacted by the Deepwater Horizon oil spill. Gulf of Mexico Oil Spill and Ecosystem Science Conference, New Orleans, LA February 6-10, 2017. (oral presentation)
- 186) **Engel, A.S.**\*, Paterson, A.T., **Boling, K.**, Roberts, B. (2017) Specificity of bacterial communities to dominant standing vegetation in coastal salt marshes, Port Sulphur, Louisiana. Gulf of Mexico Oil Spill and Ecosystem Science Conference, New Orleans, LA February 6-10, 2017. (oral presentation)
- 185) Kokesh, B.<sup>CG</sup>, Anderson, L.C., **Engel, A.S.** (2017) Assessing the diversity of lucinid bivalves from coastal and anchialine habitats on San Salvador Island, the Bahamas. Society of Integrative and Comparative Biology Annual Meeting, New Orleans, LA. (poster)

## 2016

- 184) Lim, S.J.<sup>CG</sup>, **Goemann, A.**<sup>G</sup>, **Engel, A.S.**, Anderson, L.C. & Campbell, B.J. (2016). Taxonomic, genetic and functional diversity of chemosymbiosis in lucinid bivalves from coastal biomes. American Society for Microbiology South Carolina Branch 2016 Fall Meeting. University of South Carolina Upstate, South Carolina. (**won best student oral presentation**)
- 183) **Brown, T.**<sup>G</sup>, **Engel, A.S.**, Pfiffner, S.M. (2016) Diel fluctuations in natural organic matter quality in an oligotrophic cave system. American Geophysical Union, San Francisco, CA. (poster presentation)
- 182) **Johnson, H.M.**<sup>U</sup>, **Engel, A.S.**, Paterson, A. (2016) Compositional changes for hydrocarbon-degrading microorganisms in marsh sediment from Grand Isle, Louisiana, 2011-2014. Geological Society of America Abstracts with Programs, Denver, CO. Vol. 48, No. 7. doi: 10.1130/abs/2016AM-286077. (poster presentation)
- 181) Kokesh, B.S.<sup>CG</sup>, Anderson, L.C., **Engel, A.S.** (2016) Morphometric and ecological discrepancies of Lucinidae (Bivalvia) in various marine environments on San Salvador island, The Bahamas. Geological Society of America Abstracts with Programs, Denver, CO. Vol. 48, No. 7. doi: 10.1130/abs/2016AM-282275. (poster presentation)
- 180) **Engel, A.S.**\*, **Paterson, A.T.**, **Keenan, S.W.** (2016) A little drop will do: Surprises from epikarstic drip water microbiology. National Speleological Society meeting, Ely, Nevada, July. (oral)
- 179) **Keenan, S.W.**, **Paterson, A.T.**, Niemiller, M.L., Slay, M., **Engel, A.S.** (2016) The first observations of a stygobiont snail (Hydrobidae, *Fontigens* sp.) in Tennessee. National Speleological Society meeting, Ely, Nevada, July. (oral presentation)
- 178) Lim, S.J.<sup>CG</sup>, **Goemann, A.**<sup>G</sup>, **Engel, A.S.**, Anderson, L.C. & Campbell, B.J. (2016). Diversity of chemosymbiosis in lucinid bivalves. Clemson Biological Sciences Annual Student Symposium. Clemson University, South Carolina. (poster presentation)
- 177) **Paterson, A.T.**, Iliffe, T.M., Bracken-Grissom, H., Pérez-Moreno, J.L., Gonzalez, B.C., **Engel, A.S.** (2016) Niche bacterial and archaeal community compositions as indicators of ecosystem processes and health in Bahamian and Mexican anchialine caves. International Conference for Subterranean Biology, Fayetteville, Arkansas. June 12-17, 2016. p. 73. [http://www.speleobiology.com/icsb2016/wp-content/uploads/bsk-pdf-manager/ICSB\\_2016\\_Abstracts\\_2.pdf](http://www.speleobiology.com/icsb2016/wp-content/uploads/bsk-pdf-manager/ICSB_2016_Abstracts_2.pdf) (oral presentation)
- 176) **Engel, A.S.**\* (2016) Prevalence of microbial taxonomic groups to specific subterranean habitats may shed light on ubiquity of microbial function in cave ecosystems. International Conference for Subterranean Biology, Fayetteville, Arkansas. June 12-17, 2016. p. 20. [http://www.speleobiology.com/icsb2016/wp-content/uploads/bsk-pdf-manager/ICSB\\_2016\\_Abstracts\\_2.pdf](http://www.speleobiology.com/icsb2016/wp-content/uploads/bsk-pdf-manager/ICSB_2016_Abstracts_2.pdf) (oral presentation)
- 175) Hutchins, B.T., **Engel, A.S.**, Nowlin, W.H., Schwartz, B.F. (2016) Biodiversity, stability, and trophic complexity in the Edwards Aquifer, United States: The influence of chemolithoautotrophy on stygobiont community structure. International Conference for Subterranean Biology, Fayetteville, Arkansas. June 12-17, 2016. p. 44. [http://www.speleobiology.com/icsb2016/wp-content/uploads/bsk-pdf-manager/ICSB\\_2016\\_Abstracts\\_2.pdf](http://www.speleobiology.com/icsb2016/wp-content/uploads/bsk-pdf-manager/ICSB_2016_Abstracts_2.pdf) (oral presentation)

- 174) Johnson H.<sup>U</sup>, **Engel A.S.**, Paterson A.T. (2016) Diversity and abundance of alkane-degrading bacteria from Grand Isle, Louisiana, 2011-2014. 3<sup>rd</sup> annual Southeastern Biogeochemistry Symposium, Knoxville, TN, March 11-13, p 22. (poster presentation)
- 173) Bagley B.<sup>G</sup>, Paterson A.T., **Engel A.S.** (2016) Bacterial community responses to natural and anthropogenic stressors in Louisiana marsh soils, 2012-2014. 3<sup>rd</sup> annual Southeastern Biogeochemistry Symposium, Knoxville, TN, March 11-13, p 13. (poster presentation)
- 172) **Engel, A.S.**\*, Paterson, A.T., R.E. Turner, E. Overton (2016) Tracking changes in organic carbon sources for Louisiana marshes following the Deepwater Horizon oil spill. Gulf of Mexico Oil Spill and Ecosystem Science Conference, Tampa, Florida, February 1-4, 2016. (oral presentation)
- 171) Bagley, B.<sup>G</sup>, Paterson, A.T., **Engel, A.S.** (2016) Homogeneity of microbial communities in marsh soils since the Deepwater Horizon oil spill. Gulf of Mexico Oil Spill and Ecosystem Science Conference, Tampa, Florida, February 1-4, 2016. (poster presentation)
- 170) Roberts, B.J., Chatelain, K., Fortin, S., Chelsky, A., Setta, S., Sullivan, H., Ceresnak, N., Baudoin, K., Scheuermann, R., Bernhard, A., Paterson, A.T., **Engel, A.S.**, Giblin, A. (2016) Highly variable biogeochemical process rates across salt marsh soil subhabitats: implications for scaling-up plot level measurements. Gulf of Mexico Oil Spill and Ecosystem Science Conference, Tampa, Florida, February 1-4, 2016. (poster presentation)

## 2015

- 169) Lim, S.J.<sup>CG</sup>, Goemann, A.<sup>G</sup>, **Engel, A.S.**, Anderson, L.C. & Campbell, B.J. (2015). Functional diversity of chemosymbiosis in lucinid bivalves from coastal biomes. First Gordon Research Conference on Animal-Microbe Symbioses. Waterville Valley Resort, New Hampshire (poster).
- 168) Keenan, S.W.<sup>G</sup>, **Engel, A.S.** (2015) Thermodynamic predictions of bioapatite stability in environmental systems. Geological Society of America meeting, Baltimore, MD, Nov. 1 – 4, 2015.
- 167) Long, B.L.<sup>CG</sup>, Anderson, L.C., **Engel, A.S.** (2015) Testing the association of *Stewartia floridana* shell morphology with environmental parameters in a coastal seagrass area. Geological Society of America meeting, Baltimore, MD, Nov. 1 – 4, 2015. (**received best student poster award, Geobiology and Geomicrobiology division**)
- 166) Brannen-Donnelly, K.<sup>G</sup>, **Engel, A.S.** (2015) Evidence for functional niches and dominant carbon utilization pathways in an epigenic cave system prone to nutrient pulses. 22nd International Symposium on Environmental Biogeochemistry, Sept 28 – Oct 2 2015, Piran, Slovenia. (oral presentation; **received best student presentation award, tied for 1<sup>st</sup>**)
- 165) **Engel, A.S.**\*, Harmon, D.<sup>U</sup>, Paterson, A.T., Keenan, S.W.<sup>G</sup> (2015) Cave dripwater microbiology reveals epikarstic biogeochemical cycling that can affect speleothem records. 22nd International Symposium on Environmental Biogeochemistry, Sept 28 – Oct 2 2015, Piran, Slovenia. (oral)
- 164) **Engel, A.S.**\* (2015) Response of bacterial communities to changes in alkaline sources and distribution in marsh sediments over time. 22nd International Symposium on Environmental Biogeochemistry, Sept 28 – Oct 2 2015, Piran, Slovenia. (poster)
- 163) Niemiller, M.L.<sup>CPD</sup>, Zigler, K.S., Stephen, C.D.R.<sup>CG</sup>, Carter, E.T.<sup>CG</sup>, Paterson, A.T., Taylor, S.J., Fenolio, D.B., Kendall, K.D.<sup>CPD</sup>, **Engel, A.S.**\* (2015) Updated invertebrate and vertebrate cave fauna records for eastern Tennessee Appalachian Valley and Ridge. National Speleological Society convention, Waynesville, Missouri, July 13-17, 2015. (oral)
- 162) Brannen-Donnelly, K.<sup>G</sup>, **Engel, A.S.** (2015) Evidence for stable functional niches in an epigenic cave system prone to disturbance. National Speleological Society convention, Waynesville, Missouri, July 13-17, 2015. (oral presentation)
- 161) **Engel, A.S.**\* (2015) Cave microbiology research publication history and collaboration, 1997-2015. National Speleological Society convention, Waynesville, Missouri, July 13-17, 2015. (oral)
- 160) Kendall, K.D.<sup>CPD</sup>, Niemiller, M.L.<sup>CPD</sup>, **Engel, A.S.**, Zigler, K.S., Fenolio, D.B. (2015) Cave biodiversity and conservation teaching and learning module for K-5 students in the Tennessee-Alabama-Georgia region. National Speleological Society convention, Waynesville, Missouri, July 13-17, 2015. (poster presentation)

- 159) Doty, T.W.<sup>G</sup>, **Engel, A.S.** (2015) Microbial diversity fluctuations within mangrove-associated sediments that harbor the lucinid bivalve, *Phacoides pectinatus*, and their free-living bacterial endosymbionts. 2nd Annual Southeastern Biogeochemistry Symposium, Atlanta, GA, March 28-29, 2015. (poster presentation)
- 158) **Engel, A.S.**, Paterson, A.T. (2015) Ecosystem responses to changing microbial community compositions as a function of natural and anthropogenic stressors in Louisiana coastal marshes. Gulf of Mexico Oil Spill and Ecosystem Science Conference, Houston, Texas, February 16-19, 2015.
- 157) Beeler, S.<sup>U</sup>, Paterson, A.T., **Engel, A.S.** (2015) Microbial community response to natural organic matter enrichments after being primed by Deepwater Horizon oiling. Gulf of Mexico Oil Spill and Ecosystem Science Conference, Houston, Texas, February 16-19, 2015.
- 156) Keenan, S.W.<sup>G</sup>, Elsey, R.M., **Engel, A.** (2015) The good, the bad, and the unknown: microbial symbiosis of the American alligator (*Alligator mississippiensis*). Symposia of the Society for Integrative and Comparative Biology, West Palm Beach, Florida, January 3-7, 2015 (oral)

#### 2014

- 155) **Engel, A.S.**\* (2014) X-ray absorption spectroscopy applications for arsenic and sulfur. International Society for Environmental Biogeochemistry Short Course and Research Colloquium, on "Interfacial Processes in Environmental Biogeochemistry," Cancun, Mexico, November 16-21, 2014. (oral presentation, 30 min)
- 154) Goemann, A.<sup>G</sup>, **Engel, A.S.** (2014) Physical and geochemical parameters governing the distribution of lucinid clams and associated symbiotic bacteria. International Society for Environmental Biogeochemistry Short Course and Research Colloquium, on "Interfacial Processes in Environmental Biogeochemistry," Cancun, Mexico, November 16-21, 2014. (oral presentation, 15 min)
- 153) Brannen, K.M.<sup>G</sup>, **Engel, A.S.** (2014) How prevalent are transported microorganisms to the microbial community of an epigenic cave stream? International Symposium on Subsurface Microbiology, Pacific Grove, CA, Oct. 5-10. (poster)
- 152) Brown, T.<sup>G</sup>, Brannen, K.M.<sup>G</sup>, **Engel, A.S.**, Piffner, S. (2014) Diurnal changes in carbon cycling dynamics in an oligotrophic karst aquifer under base flow conditions. International Symposium on Subsurface Microbiology, Pacific Grove, CA, Oct. 5-10. (oral presentation)
- 151) Brown, T.<sup>G</sup>, **Engel, A.S.** (2014) Nitrogen enrichment of autochthonous dissolved organic matter in a surface-influenced karst aquifer. International Symposium on Subsurface Microbiology, Pacific Grove, CA, Oct. 5-10. (oral presentation)
- 150) **Engel, A.S.**\*, Rossmassler, K.<sup>CPD</sup>, Hanson, T.E., Paterson, A.T., Campbell, B.J. (2014) Functional potential of Epsilonproteobacteria in sulfidic karst microbial communities. International Symposium on Subsurface Microbiology, Pacific Grove, CA, Oct. 5-10. (talk).
- 149) Anderson, L.C., Roopnarine, P.D., Roopnarine, D., Fry, B., **Engel, A.S.** (2014) Coastal ecosystem changes associated with the 2010 Deepwater Horizon oil spill and their implications for the fossil record. 4<sup>th</sup> International Palaeontological Congress, Mendoza, Argentina. Sept. 28-Oct. 3. (talk).
- 148) Anderson, L.C., Long, B.<sup>CG</sup>, **Engel, A.S.** (2014) Calibrating morphometric proxies of chemosymbiosis: A test case using Lucinidae (Bivalvia). 4<sup>th</sup> International Palaeontological Congress, Mendoza, Argentina. Sept. 28-Oct. 3. (talk)
- 147) Beeler, A.<sup>U</sup>, Paterson, A.T., **Engel, A.** (2014) Microbial degradation of organic matter and community response in coastal marshes. 2<sup>nd</sup> Midwest Geobiology Symposium, Chicago, IL, September 27, 2014 (poster).
- 146) **Engel, A.S.**\* (2014) Functional microbiology of karst: towards the development of a unifying model for cave ecology based on 'omics. National Speleological Society convention, Huntsville, Alabama. July 14-18, 2014 (talk).
- 145) **Engel, A.S.**\* (2014) Microbial activities at environmental gradients in cave and karst ecosystems. 22<sup>nd</sup> International Karstological School, Postojna, Slovenia. **Invited talk.**
- 144) Keenan, S.W.<sup>G</sup>, **Engel, A.S.**, Roy, A., Bovenkamp, G.L. (2014) From bone to fossil: early diagenesis of apatite. Goldschmidt, June 8-13, 2014. Sacramento, CA. **Invited talk.**

- 143) Beeler, S.<sup>U</sup>, Paterson, A.T., Drennen, C.<sup>G</sup>, **Engel, A.S.** Microbial degradation of labile organic matter from *Spartina alterniflora*-dominated marshes. Goldschmidt, June 8-13, 2014. Sacramento, CA. (poster presentation)
- 142) **Engel, A.S.**, Prange, A., Bovenkamp, G.L., Peng, Y., Hormes, F.J. (2014) Isotopic and compositional characterization of sulphur gases and condensates formed after heating sulphur-containing solids: Implications for sedimentary records. Goldschmidt, June 8-13, 2014. Sacramento, CA. (oral presentation)
- 141) Hooper-Bui, L.M., Turner, R.E., Overton, E., **Engel, A.S.**, Rabalais, N., Parsons, M., Justic, D., Taylor, S., Kearney, M., Roberts, B.J., et al. (2014) Key insights into the coastal effects of the Macondo Blowout from the Coastal Waters Consortium: A GoMRI Consortium. International Oil Spill Conference, Savannah, Georgia, May 5-8, 2014.
- 140) Vishni, L.<sup>U</sup>, Paterson, A.T., **Engel, A.S.** (2014) Evaluating the effects of disturbance on microbial diversity from marsh sediment and water at Grand Isle, Louisiana. 1<sup>st</sup> Annual Southeastern Biogeochemistry Symposium, Atlanta, GA, April 5-6, 2014. (poster presentation)
- 139) Parker, L.<sup>U</sup>, Brown, T.<sup>G</sup>, **Engel, A.S.** (2014) Extended alkaline incubation times to quantify protein content in karstic aquifers and other oligotrophic groundwater systems. 1<sup>st</sup> Annual Southeastern Biogeochemistry Symposium, Atlanta, GA, April 5-6, 2014. (poster)
- 138) Brannen, K.M.<sup>G</sup>, **Engel, A.S.** (2014) Seasonality influences allochthonous organic matter and microbial community diversity in a cave stream. 1<sup>st</sup> Annual Southeastern Biogeochemistry Symposium, Atlanta, GA, April 5-6, 2014. (poster presentation)
- 137) Beeler, S.<sup>U</sup>, Paterson, A.T., **Engel, A.S.** (2014) Degradation of *Spartina alterniflora*-derived dissolved organic matter by marsh sediment communities. 1<sup>st</sup> Annual Southeastern Biogeochemistry Symposium, Atlanta, GA, April 5-6, 2014. (poster presentation)
- 136) **Engel, A.S.**, Drennen, C.<sup>G</sup>, Paterson, A., Liu, C.<sup>G</sup>, Turner, R.E., Overton, E. (2014) Differences in petroleum hydrocarbon compounds from Louisiana coastal marshes correspond to specific changes in microbial community composition. 2<sup>nd</sup> Gulf of Mexico Oil Spill and Ecosystem Science Conference, Mobile, AL, Jan. 26-30, 2014. **Invited oral presentation.**
- 135) Drennen, C.<sup>G</sup>, **Engel, A.S.** (2014) Increased marsh deterioration associated with changes in microbial diversity following the 2010 Deepwater Horizon oil spill. 2<sup>nd</sup> Gulf of Mexico Oil Spill and Ecosystem Science Conference, Mobile, AL, Jan. 26-30. (poster presentation)
- 134) Turner, R., Overton, E.B., Meyer, B., Miles, M., McClenachan, G., Hopper-Bui, L, **Engel, A.S.**, Lee, J., Milan, C., Gao, H. (2014) Trajectory of changing DWH oil in Louisiana marshes, 2010-2013. 2<sup>nd</sup> Gulf of Mexico Oil Spill and Ecosystem Science Conference, Mobile, AL, Jan. 26-30. (poster)

### **Plenary, Keynote, Invited Speaker, Department Seminars, Banquet – past 6 yrs only**

#### To occur 2019

- “Best of Karst,” Karst Research Group, University of South Florida, April (**Keynote speaker**)

#### 2018

- 2<sup>nd</sup> Rocky Mountain Geobiology Symposium, Boulder, Colorado, April (**Keynote Speaker**)

#### 2017

- 15<sup>th</sup> Symposium on Aquatic Microbial Ecology, Zagreb, Croatia (**Keynote Speaker, “Closer”**)
- International Symposium on Subsurface Microbiology, Rotorua, New Zealand (**Keynote Speaker**)

#### 2016

- University of Kentucky, Department of Geology (Invited Seminar Speaker)
- Tennessee Cave Survey spring meeting, Univ. Tennessee, Knoxville, TN (Invited Speaker)

## 2015

- McClung Museum, University of Tennessee (Speaker during Earth Science Week)
- Tennessee Department of Environment and Conservation, DOE Oversight Office, Oak Ridge, TN (Invited Speaker)
- Smoky Mountain Grotto, Knoxville, TN (Invited Speaker)
- Ball State University, Department of Chemistry/Environmental Sciences, Muncie, IN (Invited Seminar Speaker)

## 2014

- Vanderbilt University, Department Earth & Environmental Sciences, Nashville, TN (Invited Seminar Speaker)
- Tennessee Cave and Karst Working Group, Tennessee Cave Survey, University of the South, Sewanee, Tennessee (Invited Speaker)
- Sigma Xi - University of Tennessee chapter (**Keynote Speaker**)
- 22<sup>nd</sup> International Karstological School, Postojna, Slovenia (**Plenary Speaker**)
- Southwest University, Departments of Geology and Geography, Chongqing, China
- UNESCO International Research Center on Karst, Guilin, China. International Training Course specializing on Karst Microbiology (**Plenary Speaker, Invited Lecturer**)

## 2013

- “Carbon and Boundaries in Karst,” Karst Waters Institute, Carlsbad, New Mexico (Invited Speaker)
- East Tennessee Grotto, Oak Ridge, TN (Invited Speaker)
- International Congress of Speleology, Brno, Czech Republic (**Plenary Speaker**)

## **APPEARANCES, PUBLICITY, & ARTISTIC CONTRIBUTIONS**

- 2018: Article featuring research in Hawaiian lava tubes and filming for **True to Nature documentary**; “Tiny Wildlife in Ka’ū Lava Tube,” [http://kaunewsbriefs.blogspot.com/2018\\_09\\_10\\_archive.html](http://kaunewsbriefs.blogspot.com/2018_09_10_archive.html)
- 2017: Article about funding, “UT’s Engel Co-investigator on Grant Funded through Oil Spill Penalties,” *Tennessee Today* (reposted other sites, including OilPriceNews, BuzzFeed) <http://tntoday.utk.edu/2017/07/19/uts-engel-coinvestigator-grant-funded-oil-spill-penalties/>
- 2016: Appeared in “Rocky Top” **UT’s 30-second television half-time commercial**, featuring cave research (while singing a line from the song), produced by UT Office of Communications and Marketing <http://tntoday.utk.edu/2016/08/29/rocky-top-heard-tennessee-ut-commercial-2/> <https://www.youtube.com/watch?v=7qGrqkhY2FE>
- 2015: Article about election to Fellow of Explores Club, “Professor Named to Same Society as First Man on the Moon,” *Tennessee Today* <http://tntoday.utk.edu/2015/10/22/professor-named-society-man-moon/>
- 2015: **Podcast** interview, photographs used for oil spill research and high-performance computing, “NICS and XSEDE Advance an Investigation of the Gulf Coast Ecosystem” (reposted >12 other sites, including *Tennessee Today*) <https://www.nics.tennessee.edu/gulf-coast-research>
- 2015: *Deepwater Horizon* research highlighted in *Inside HPC* magazine (reposted >12 other websites, including Gulf of Mexico Research Initiative) <http://insidehpc.com/2015/02/podcast-supercomputing-the-impact-of-deepwater-horizon/>
- 2013: Photograph used for University of Tennessee News, “UT Professor Receives NSF Award to Investigate Mysterious Clams That Are Key to Biodiversity,” Posted October 2. <http://www.utk.edu/tntoday/2013/09/30/annette-engel-receives-nsf-award/>
- 2013: Research and photograph featured in the **National Science Foundation Press Release**, September 27, for Dimensions of Biodiversity awards ; include link to report with 2-page research details [http://www.nsf.gov/news/news\\_summ.jsp?cntn\\_id=129242](http://www.nsf.gov/news/news_summ.jsp?cntn_id=129242)

- 2013: Lucinid bivalve chemosymbiosis research featured in Tennessee Today, Sept. 30.  
<http://www.utk.edu/mtoday/2013/09/30/annette-engel-receives-nsf-award/>; [http://thetandd.com/sports/outdoors/scientist-studies-threats-to-million-year-old-marine-life/article\\_6f4323f8-4f0c-11e3-9aac-0019bb2963f4.html](http://thetandd.com/sports/outdoors/scientist-studies-threats-to-million-year-old-marine-life/article_6f4323f8-4f0c-11e3-9aac-0019bb2963f4.html)
- 2013: Interviewed after Plenary talk at the International Congress of Speleology, Brno, Czech Republic, about geomicrobiology in karst. July 24; aired on local news in CZ <http://www.ceskatelevize.cz/zpravodajstvi-brno/zpravy/235789-za-podobou-krasovych-oblasti-stoji-mikroorganizmy/>
- 2013: Oil spill research and photographs featured in April 28, Knoxville News Sentinel  
<http://www.knoxnews.com/news/2013/apr/28/ut-experts-bp-oil-spill-gone-from-deep-ocean-but/>  
<http://www.bayoubuzz.com/louisiana-news/bp-oil-spill/item/429677-ut-experts-bp-oil-spill-gone-from-deep-ocean-but-remains-in-marshes>
- 2012: Research featured by ScienceAlerts.com (Science Alerts Social Network), WorldWideScience.org, Science.gov, Geoscience.net, and other outlets (based on publication “Bacterial diversity of siliciclastic sediments in a *Thalassia testudinum* meadow and the implications for *Lucinisca nassula* chemosymbiosis”)  
[http://sciencealerts.com/stories/1945468/Bacterial\\_diversity\\_of\\_siliciclastic\\_sediments\\_in\\_a\\_Thalassia\\_testudinum\\_meadow\\_and\\_the\\_implications\\_for\\_Lucinisca\\_nassula\\_chemosymbiosis.html](http://sciencealerts.com/stories/1945468/Bacterial_diversity_of_siliciclastic_sediments_in_a_Thalassia_testudinum_meadow_and_the_implications_for_Lucinisca_nassula_chemosymbiosis.html)  
<http://worldwidescience.org/topicpages/t/testudinum+turtle+grass.html>  
<http://www.science.gov/topicpages/t/thalassia+testudinum+beds.html>
- 2011: Oil spill research feature in September 2011, based on Gulf Research Initiative funding announcement - *Tennessee Today*, *Knoxville News Sentinel*, *Tennessee News Digest*, *EurekaAlert!* First Science NEW, *Oil World 2011*, AOL News, *SiloBreaker*, *e!* Science News, *BioTechMashup*, *Chem Info*, plus others <http://m.knoxnews.com/news/2011/sep/12/university-of-tennessee-professor-part-of-12-m/>;  
[http://www.eurekaalert.org/pub\\_releases/2011-09/uota-uri091211.php](http://www.eurekaalert.org/pub_releases/2011-09/uota-uri091211.php); [http://www.firstscience.com/home/news/agriculture/ut-researcher-investigates-deepwater-horizon-oil-spill-impact-on-coast\\_113083.html](http://www.firstscience.com/home/news/agriculture/ut-researcher-investigates-deepwater-horizon-oil-spill-impact-on-coast_113083.html); <http://www.oil-world-2011.com/about/tag/oil-spill-effects/page/6>
- 2010: Research and photographs feature by the **National Science Foundation Press Release 10-142**, August 16, “Gulf Oil Spill: NSF Awards Grant to Study Effects of Oil and Dispersants on Louisiana Salt Marsh Ecosystem” [http://www.nsf.gov/news/news\\_summ.jsp?cntn\\_id=117498&org=NSF&from=news](http://www.nsf.gov/news/news_summ.jsp?cntn_id=117498&org=NSF&from=news)
- 2010: Interviewed for CNN, WKRG Mobile News, “Oil hits Alabama, Mississippi barrier islands, Tarballs on Dauphin Island;” Posted June 1. <http://www.cnn.com/2010/US/06/01/oil.spill.alabama/index.html>;  
[http://www.wkrg.com/gulf\\_oil\\_spill/article/tarballs-on-dauphin-island/892429/Jun-01-2010\\_10-51-pm/](http://www.wkrg.com/gulf_oil_spill/article/tarballs-on-dauphin-island/892429/Jun-01-2010_10-51-pm/)
- 2009: Photographs of LSU Geology students in lab using equipment correctly, used for a training program made by HRP Associates, Inc., Connecticut.
- 2008: Interviewed for **National Public Radio**, Alaska, “Southeast Cave Life Chews through Rock” by Ed Schoenfeld. Posted December 21.  
[http://kfsk.org/modules/local\\_news/index.php?op=sideBlock&syndicated=true&ID=489](http://kfsk.org/modules/local_news/index.php?op=sideBlock&syndicated=true&ID=489)
- 2008: Photographs, Caves, by S.M. Walker (Lerner Publications Company), p. 37 & 39.
- 2008. Photograph, Biology, 8th Ed., Campbell and Reece (textbook). Benjamin Cummings.
- 2007: Photograph, Center for Public Health Preparedness, DeKalb County Board of Health, Atlanta, Georgia.
- 2007: “Ist die Erde ein Lebewesen”, by Holger Diedrich. *Wunder Natur*, p 36-42. [In German] Reference to ongoing investigations in Lower Kane Cave, Wyoming, being the “window into the subsurface” for geomicrobiology research interests.
- 2007: Reprinted photographs, Microbiology, 7/E, by Wiley et al. (textbook), McGraw-Hill.
- 2006: Photograph, Cave Sleuths: Solving Science Underground, by L. Lindrop. (Twenty-first Century Books, Lerner Publishing Group), p. 72.
- 2006: “Subterranean Life Thrives Deep in Water System”, by Michael R. Taylor. *Houston Chronicle*, June 19.
- 2005: Photographs, *Illustreret Videnskab* (Danish Science Magazine), “Bakterier bigger drypsteshuler”, NR 5/2004 (10/3 - 30/3), pp. 18-19.
- 2004: “Bakterier bigger drypsteshuler”, *Illustreret Videnskab* (10/3 - 30/3), pp. 18-19.
- 2004: “Slime Hunters”, *Science World* vol. 81(4):18-20.

- 2004: Research citation in *Science, Nature* (Online 10 May, doi:10.1038/news040503-12), *Spiegel*, *Nederlandse Geologische Vereniging*, and other print and web sources.
- 2003: Photographs, Exploring Caves, by B.S. Lawson, a Discovery Links Intermediate book as part of set (Newbridge Educational Publishers, New York), p. 22.
- 2002: PBS-NOVA television show, “Mysterious Life of Caves”. Companion website <http://www.pbs.org/wgbh/nova/caves/>
- 2002: “Subterranean Surprises”, by E. Haddingham, *Smithsonian Magazine*, October.
- 2001-2002: With M.L. Porter; photograph included in traveling **Smithsonian Institution** Exhibit “Exploring Caves” for IMAX movie. <http://www.sites.si.edu/exhibitions/Caves.pdf>
- 2001: “**Merit Award**,” National Speleological Society for photographs, with Megan Porter.

## STUDENT AND POSTDOCTORAL RESEARCH ASSOCIATE MENTORING HISTORY

### University of Tennessee Graduate Students (Dept. Earth & Planetary Sciences)

- Victoria Frazier, Ph.D. (August 2018 – present)
- Brandon Bagley, M.S., Influence of Environmental Conditions and Inundation History on Bacterial Diversity of Salt Marsh Soils in Southern Louisiana [http://trace.tennessee.edu/utk\\_gradthes/4720](http://trace.tennessee.edu/utk_gradthes/4720) (July 2015 – May 2017) [http://trace.tennessee.edu/utk\\_gradthes/4720/](http://trace.tennessee.edu/utk_gradthes/4720/) Currently employed as data analyst, Knoxville, Tennessee
- Teresa Brown, Ph.D., Organic matter cycling in cave ecosystems, KY (Aug. 2011 – May 2017) [http://trace.tennessee.edu/utk\\_graddiss/4389/](http://trace.tennessee.edu/utk_graddiss/4389/); 2012 *Cave Conservancy Foundation Scholar* Currently employed as **adjunct professor**, Lincoln Memorial University, Tennessee
- Kathleen Brannen-Donnelly, Ph.D., Organic matter in karst, KY (Aug. 2011 – Dec. 2015) [http://trace.tennessee.edu/utk\\_graddiss/3543/](http://trace.tennessee.edu/utk_graddiss/3543/); *National Science Foundation Graduate Research Fellow*; 2014 *Cave Conservancy Foundation Scholar* Currently employed as Senior Geologist, Geosyntech, California
- T. “Walt” Doty, M.S., Bacterial diversity of *Phacoides pectinatus*, FL (Jan. 2014 – Dec 2015) [http://trace.tennessee.edu/utk\\_gradthes/3548/](http://trace.tennessee.edu/utk_gradthes/3548/) Currently employed as EHS staff, Operations & Oversight Division, Dept. of Energy, Office of Science, Oak Ridge, Tennessee
- Aaron Goemann, M.S., Bacterial diversity of *Stewartia floridana*, FL (Aug. 2014 – Dec. 2015) [http://trace.tennessee.edu/utk\\_gradthes/3549/](http://trace.tennessee.edu/utk_gradthes/3549/)
- Sarah Keenan, Ph.D., Microbial role in bone diagenesis & chemistry (Aug. 2011 – May 2014) [http://trace.tennessee.edu/utk\\_graddiss/2767/](http://trace.tennessee.edu/utk_graddiss/2767/) Currently employed as **Assistant Professor** in Paleontology, Department of Geology & Geological Engineering, South Dakota School of Mines and Technology
- Brendan Headd, Ph.D., Biogeography of Epsilonproteobacteria (Jan. 2011 – Aug. 2013) [http://trace.tennessee.edu/utk\\_graddiss/2433/](http://trace.tennessee.edu/utk_graddiss/2433/) Currently employed as a Microbiologist, Contaminant Fate and Transport Research, USDA Agricultural Research Service, Riverside, CA

### Louisiana State University Graduate Students (Dept. Geology & Geophysics)

- Audrey Paterson, M.S. (2010 – 2012) <http://etd.lsu.edu/docs/available/etd-04232012-160428/> Currently employed as Laboratory Manager, University of Tennessee – Knoxville
- Axita Gupta, M.S. (2010 – 2012) <http://etd.lsu.edu/docs/available/etd-04222012-100629/> Currently employed as Geologist, Kerogen Exploration LLC
- Chang Liu, M.S. (2009 – 2011) <http://etd.lsu.edu/docs/available/etd-11102011-122352/> Currently a postdoc
- Cassie Gray, M.S. (2008 – 2010) *unavailable in ETD* Currently employed as Senior Geologist, Jacobs Environmental Services, Louisiana
- Lindsey Johnson, M.S. (2008 – 2010) *unavailable in ETD* Currently self-employed, Sweet Olive Studies
- Eric Prokocki, M.S. (2008 – 2010; co-supervised with Mike Blum) *unavailable in ETD* Currently a postdoctoral researcher, Jackson School of Geosciences, University of Texas – Austin

- Matt Garvin, M.S. (2008; co-supervised with Mike Blum) <http://etd.lsu.edu/docs/available/etd-10032008-173527/> Currently employed as Senior Geologist, Merit Energy Company, Dallas, Texas
- Angela Green-García, M.S. (2005 – 2008) <http://etd.lsu.edu/docs/available/etd-04042008-093335/> Employed at Johnson Space Center, NASA, Houston, Texas
- Kelli D. Willson Randall, M.S. (2004 – 2006) <http://etd.lsu.edu/docs/available/etd-04052006-172605/> Currently employed as Geologic Operation Coordinator, Chevron, Pennsylvania

### **University of Tennessee Undergraduate Student Mentorship**

- Julie Coulombe, Earth & Planetary Sciences (May 2018 – September 2018)
- Holly Nichols, REU program, Microbiology (May 2018 – August 2018)
- Amber Tran, BCMB (May 2016 – May 2018) *Completed honors thesis, May 2018*
- Zackary Payne, Microbiology (March 2016 – May 2017)
- Samuel Scheffler, Earth & Planetary Sciences (August 2016 – May 2017)
- Hannah Teffeteller, Earth & Planetary Sciences (Aug. 2015 – Dec. 2016)
- Katherine Hutchins, Soil Science (Dec. 2015 – Feb. 2017)
- Paxton Parker, Animal Science Pre-Vet major (Aug. 2015 – May 2016)
- Abby Harmon, Earth & Planetary Sciences (May 2015 – Dec. 2016)  
*Received Cave Conservancy Foundation Undergraduate Fellowship 2016-2017*
- Chaz Lee, Earth & Planetary Sciences (Dec, 2014 – May 2015)
- Caleb Ward, Earth & Planetary Sciences (Aug. 2014 – Dec. 2014)
- Hunter Johnson, Earth & Planetary Sciences (July 2014 – Dec. 2016)
- Aaron Stubblefield, Earth & Planetary Sciences (Dec. 2013 – Dec. 2014)
- Lauren Parker, Earth & Planetary Sciences (Jan. 2014 – Dec. 2014)
- Lena Vishni, Earth & Planetary Sciences (Aug. 2013 – Aug. 2014)
- Sara Mills, Earth & Planetary Sciences (Aug. 2013 – Dec. 2014)
- T. “Walt” Doty, Earth & Planetary Sciences (May 2013 – Dec. 2013)
- Hassie Stooksbury, Earth & Planetary Sciences (March 2013- Aug. 2013)
- Dalia Harmon, Earth & Planetary Sciences (March 2013 – May 2014)
- Scott Beeler, Earth & Planetary Sciences (Sept. 2012 – May 2014)
- Edith Ross Larson, Earth & Planetary Sciences (Aug. 2012 – May 2013)
- Alissa Phillips, Earth & Planetary Sciences (Jan. 2012 – Dec. 2013)
- Joshua Cox, Earth & Planetary Sciences (Jan. 2012 – May 2012)
- Thomas Power, Earth & Planetary Sciences (Jan. 2012 – Dec. 2012)

### **University of Tennessee Research Associate and Post-doctoral Researcher Mentoring**

- Dr. Susan Pfiffner, Research Associate Professor, Dept. Microbiology (hosting Jan. 2018 – present)
- Abigail Harmon, Research Coordinator, Dept. Earth & Planetary Sciences (Sept. 2017 – present)
- Yuan Yun, Visiting Doctoral Student Scholar, Dept. Earth & Planetary Sciences (March 2017 – March 2018) *Supported by China Scholarship Council.*
- Audrey Paterson, Laboratory Manager, Dept. Earth and Planetary Sciences (November 2012 – present). *100% supported by “soft” money from grants.*
- Dr. Xiaoben Jiang, Dept. of Earth and Planetary Sciences (March 2016 – March 2018) *Funding for his 100% research and travel within US comes by my CWC-II project.*
- Abigail Harmon, Research Associate III, Dept. Earth & Planetary Sciences (Dec. 2016 – Sept. 2017); *100% supported by “soft” money my grants.*
- Dr. Qiufang He, Southwest University, Chongqing, China, Visiting Scholar (March 2016 – February 2017) *Funded through the China Scholarship Council.*
- Caleb Ward, Research Associate III, Dept. Earth & Planetary Sciences (Jan. 2015 – Sept. 2015) *100% supported by “soft” money from grants.*
- Dr. Thomas Nickles, Dept. Earth and Planetary Sciences (April 2012 – September 2012)

## **Louisiana State University Post-doctoral Researcher Mentoring**

- Dr. Justin E. Birdwell, Currently a Research Engineer, United States Geological Survey, Denver, CO (Jan. 2007 – Oct. 2009). *Research supported by my grants.*
- Dr. Megan L. Porter, Currently an Associate Professor, Dept Biology, University of Hawaii – Manoa (Sept 2007 – July 2010) *100% supported by “soft” money from grants.*
- Dr. Janez Mulec, Currently at the Karst Research Institute, Slovenia. (May 2008 – June 2008; November 2008–July 2009). *Travel in US and research 100% supported by my grants.*

## **Graduate Thesis and Dissertation Committee Service**

### **University of Tennessee**

#### PhD dissertation committees

- Geoff Gilleaudeau, EPS (2012 –2013)
- Jackson Gainer, Microbiology (2013 –2018)
- Ashley Berg, EPS (2014 –2016)
- Jason Muhlbauer, EPS (2015 –2017)
- Evin Carter, Ecol Evol Bio (2015 – 2018)
- Victoria Distefano, Bredesen Center (2015 – 2018)
- Taylor Royalty, EPS (2018 – present)

#### MS thesis committees

- Kati Ayers, EPS (2011 – 2013)
- Joy Buongiorno, EPS (2012 - 2014)
- Jenna Schmidt, EPS (2014 – 2016)
- Chris Driscoll, EPS (2015 – 2016)
- Benjamin Adams, EPS (2016 – present)
- Lauren Mullen, EPS (2018 – present)

### **Louisiana State University**

#### PhD dissertation committees

- Issaku Kohl, Geology (2007–2011)
- Yongbo Peng, Geology (2006–2011)
- Jeffrey Agnew, Geology (2004–2008)
- Colleen Wendeborn, Geology (2004–2008)
- Ryan Callegan, Microbiology (2004–2011)

#### MS thesis committees

- Stephanie Welch, Geology (2008-2009);
- Rhonika Robison, Geology (2008–2009);
- Marcela Jaramillo, Geology (2005–2006);
- Danielle Bagaley, Microbiology (2005–2006);
- Changjie Liu, Geology (2009–2012)

## **External Dissertation Committee Service, Examining Committee Member**

- Bor Krajnc, Ph.D., Jožef Stefan Institute, Department of Ecotechnology, Ljubljana, Slovenia. Advisor: N. Ogrinc (November 2015 – December 2017)
- Jean Lim, Ph.D., Department of Biological Sciences, Clemson University, Clemson, South Carolina. Advisor: B.J. Campbell (January 2015 – present)
- Gilles Tagne, Ph.D., Department of Geological Sciences, Ball State University, Muncie, Indiana (December 2015 – December 2016)
- Benjamin Hutchins, Ph.D., Department of Biology, Texas State University, San Marcos, Texas. Advisor: B. Schwartz. (2010 – Dec. 2013)
- Karen Rossmassler, Ph.D., Marine and Earth Sciences, The University of Delaware. Advisor: B.J. Campbell. (September 2008 – January 2013)
- Megan Franks Plenge, Ph.D., Department of Geological Sciences, The University of Texas at Austin. Advisor: P.C. Bennett. (September 2007 – May 2012)

## **COURSES TAUGHT**

### **University of Tennessee**

#### Undergraduate

GEOL 101, Dynamic Earth (Fa 2016, Fa 2015, Fa 2014)

GEOL 493, Independent Study (Sp 2016, Fa 2014, Sp 2014, Fa 2013, Fa 2012)

### Mixed Undergraduate & Graduate

GEOL 452, Cave and Karst Geology (Sp 2018)  
GEOL 465, Geomicrobiology (Sp 2017, Sp 2014 taught as GEOL 490/590)  
GEOL 460/560, Principles of Geochemistry (Sp 2016, Fa 2013, Sp 2012)  
GEOL 490, Special Problems in Geology (Su 2016, Field Studies in Coastal Biomes)  
GEOL 490/590 Cave and Karst Studies (Sp 2013)

### Graduate

GEOL 593, Independent Study (Fa 2018, Analytical Geochemistry Methods and Instruction)  
GEOL 593, Independent Study (Sp 2016, Fa 2015, Sp 2014, Fa 2013, Sp 2013, Fa 2012)  
GEOL 660, Seminar in Geochemistry (Fa 2016, Fa 2012, Slime through Time)  
GEOL 660, Seminar in Geochemistry (Sp 2015, Introduction to Geochemical Modeling)  
GEOL 660, Seminar in Geochemistry (Sp 2013, Organic Geochemistry of Petroleum Reservoirs)

### **Louisiana State University**

#### Undergraduate

BIOL 3999, Independent Research (Fa 2008, Sp 2009, Su 2010, Sp 2011)  
GEOL 3909, Independent Research (Sp 2011, Sp 2009)  
GEOL 3999, Undergraduate Thesis Research (Sp 2011)  
GEOL 4002, Special Topics: International Karst Field School (Su 2008)  
GEOL 4002, Special Topics: Environmental Aqueous Geochemistry (Sp 2009)

#### Mixed Undergraduate & Graduate

BIOL 4084 / GEOL4084, Geomicrobiology (every Fa, 2010 – 2004)

#### Graduate

GEOL 7900, Special Topics (every Sp, 2007 – 2011, Advanced Methods in Aqueous Geochem.)  
GEOL 7831, Seminar in Sedimentology (Fa 2007, Karst)  
GEOL 7981, Seminar in Geochemistry (Sp 2011, Ecosystem Stressors, co-taught)  
GEOL 7981, Seminar in Geochemistry (Fa 2010, Aquatic Geomicrobiology)  
GEOL 7911, Seminar in Paleontology (Sp 2007, Biogeography)  
GEOL 7981, Seminar in Geochemistry (Fa 2009, Organic Geochemistry of Petroleum Reservoirs)  
GEOL 7900, Special Topics (Sp 2006, Global Biogeochemical Cycles)  
GEOL 7981, Seminar in Geochemistry (Sp 2008, Fa 2005, Microbial Geochemistry)